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N O R T H C A R O L I N A

Pierce

BLISTER RUST CONTROL IN NORTH CAROLINA

1934

ANNUAL REPORT

North Carolina Annual Report
January 1, 1934 to December 31,1934

WHITE PINE BLISTER RUST CONTROL WORK SUMMARIZED

N. R. A. & E. C. W. ACTIVITIES

N.R.A.

Foreword:

Prior to 1934 little practical Blister Rust Control work was done in North Carolina; and the work that was carried on was done in National forests and National Park areas. Reports on the work done before 1934 are available in the Pisgah National Forest office in Asheville, N. C. on the Pisgah National Forest work; and the work done in the Great Smoky Mts. National Park area is recorded in the Smoky Park office in Gatlinburg, Tenn. Copies of the above reports are ~~available~~ in the Washington office, also.

During 1934, beginning May 1, an intensive program of Ribes scouting and eradication work was carried on, dealing with privately owned property and financed by N. R. A. funds. This work was done as protective measures against the white pine blister rust, Cronartium ribicola, and not control measures; as the disease has not been found established in the state of North Carolina.

In carrying forward the scouting and eradication program in North Carolina, we have tried to educate the people contacted to the point of cooperation; and in no case has force been used in gaining permission for this eradication. At first there was no state law pertaining to the white pine blister rust disease; but on July 25, 1934 the State Board of Agriculture adopted a group of regulations for use in the state in protecting white pine, or Ribes, from infection by eradicating the carrier of least economic importance in the particular community where one or the other might be of sufficient abundance to be of economic value to the owners.

To date, this law has not been strictly enforced; and the cooperation of the people has been found to be about 98% in an average of the sections worked.

Following are facts and figures on the North Carolina Program for 1934. Although the eradication has not been 100% complete, when we speak of a county or section as being completed, we speak in terms of completion of scouting and eradication completed as far as we could get permission for such.

Personnel:

Dr. R. W. Leiby, State Entomologist, directed the work through Mr. J. A. Ferree, State Leader. Mr. Ferree was located in Asheville, N. C. and was in direct contact with the various District Supervisors who were in charge of one or more crews of men who did scouting and eradication work. In some cases a District Supervisor was in charge of more than one crew and each crew under the Supervisor was under the immediate supervision of a scout.

White Pine (on left) and Short Leaf Pine (on right)
in the "Old Dairy" stand at Biltmore, North Carolina.
U.S. Forest Service - 170,084

In direct contact with Mr. Ferree and Dr. Leiby was Mr. Roy G. Pierce, Regional Supervisor, who made suggestions and advised the best methods of procedure with the program.

There were seven District Supervisors working under N. R. A. funds on privately owned land and one E. C. W. worker carrying on scouting and eradication work on National Forest land. The crews of scouting men were composed of two or more men who located and destroyed the Ribes. In no case were sufficient numbers of bushes found to require a special crew of laborers for eradication only.

Additional services of stenographers, clerks, and non-paid cooperators were necessary; and many other agencies were helpful in promoting BRC work in the state.

White Pine:

The following reports are listed according to the District Supervisor and counties worked:

H. G. Bolick: Supervisor:

Burke County: The commercial white pine areas in Burke County are located north west of the Catawba River, a little scattered pine grows in the southern part of the county around the south mountain area. The elevation at which white pine is found in this country is 1500 ft. to 2000 ft.

McDowell County: This county has only scattered white pine areas, only two large stands were found, the Armstrong Creek area and an area near Linville Falls. Scattered pines are found around North Fork and Ashford, N. C. The elevation at which white pine was found in this county ranged from 1400 to 3000 ft.

Howard R. Clapp, Supervisor:

Watauga County: The white pine found in Watauga County grows in scattered patches at an elevation ranging from 2600 to 3600 ft. The largest areas were found at an elevation of about 3100 to 3300 ft.

The white pine areas in this county are small, dense, and have very little other growth in them. Some of the pine growths are so thick that one has difficulty walking through them. In many cases the number of trees per acre is as much as 200 and the age of trees from 1 year to 75 years. In all cases seedlings are found in the vicinity of the pine areas.

Charles M. Hearn, Supervisor:

H. D. Poston, Scout
Paul J. Johnson, Scout

Henderson County: White pine is found in valleys, along streams and low down on the slopes, very little is found in this county high up on the mountain slopes or on the tops. In and around Fletcher, many pines are found and should be preserved for their ornamental value. Along the Green River valley, the Mud Creek flats, in the Blue Ridge section, both sides of U. S. Hw'y #64

from Hendersonville to Edneyville, around Tuxedo and Fleetwood; good stands of pine are found. The altitude ranging from 2,000 to 2,400ft.

Jackson County: White pine is found principally in the Cashiers Valley section, extending to the Transylvania county line on the North and East and to Macon county, the South Carolina line and the Nantahala Forest on the South and West. It would be safe to consider the entire area described, in good pine stand. There are greater pure stands here than in any other county of the District.

Transylvania County: This county has not been completed but white pines are found in the Sapphire section near the Jackson County line, bordered on the North by the Rosman-Cashiers Road U. S. #64 and on the South by the South Carolina line. A pure stand of pine is located two miles from Penrose east, this includes the holdings of Miss Openheimer who operates the Eagles Nest Camp. From the French Broad River on the Caesars Head Road out of Brevard to the S. C. State Line and around Cedar Mountain village.

Carey J. Hansel, Supervisor:

Hobart A. Whitman, Scout

Madison County: White pine occurs abundantly in farm wood lots and along the ridges of almost all the privately-owned lands with an elevation of 1500 to 2700 feet above sea level. The general excellent character of the soil in this County accounts in part at least for the good reproduction rate of white pine. ~~The stands of white pine are in scattered blocks in the pine.~~ The stands of white pine are in scattered blocks in the woodlots interspersed with cleared land. Much second growth of white pine is coming in naturally on cut-over areas and abandoned fields, particularly in the Laurel Sections, (Big Laurel, Little Laurel and Shelton Laurel Creeks), and Spring Creek section. As a rule the people are careful about not letting fires destroy the forests, and here it is to be noted that white pine is coming back with great rapidity. In many places white pine is found holding its own where the undercover is Rhododendron.

William P. Muse, Supervisor:

Avery County: White pine grows in Avery County at an elevation ranging from 2500 ft. to 3800 ft. in dense as well as scattered areas. A great deal of this is old timber and the ages range from small seedlings to 75 years. Pine areas of 5% and more are found in the South Central and Southeastern parts of the county. Only scattered pine is found here and there in the Northern section.

Frank Perlmutter, Supervisor:

Wilkes County: Most of the white pine in Wilkes County is located at an elevation between 1000 and 1500 ft. Nearly all stands of pine are native, very little having been planted. Young trees seem to make very good growth in the favorable climate of this county, and the soil condition seems to be very adaptable for the growing of white pine. The pine areas worked to date have been small, rather dense, and are located in the Southwestern part of the county.

H. B. Teague, Supervisor:

Rowland W. Leiby, Jr., Scout

Cities worked:

Hendersonville, N. C.: This town has a great deal of native as well as planted white pine in and around the city limits. The elevation of Hendersonville is about 2300 ft. and the climatic and soil conditions seem to be ideal for the growing of white pine. Since this is in the midst of a summer resort section and the people of this community are fond of white pines, a great deal of care is taken of the pines in this section. The ages of the pines ranges from young trees to 65 years. The density of the stands from scattered, ornamental trees to dense patches on private estates in and around Hendersonville.

Flat Rock and East Flat Rock are located near Hendersonville and Flat Rock has a great deal of large, densely planted pine stands, while East Flat Rock borders on the main pine areas and has fewer pines pretty well scattered over the town.

Saluda, N. C.: There are very few pines in Saluda on the Northeastern side of town most of the pines are planted and well scattered; but there is one dense stand of pines on the mountain slopes at the Northern side of the city. The surrounding slopes on all sides of Saluda are mainly hardwood forests and very few pines are to be seen except for an occasional lone tree that may act as a seed producing tree for future generations of pine that may take the place of the blight-killed chestnut.

Asheville, N. C. and vicinity has a great deal of white pine that is well worth protecting. The Biltmore Estate has several hundred acres of planted pines; and there are planted ~~and~~ pines scattered throughout the eastern half of the city. The surrounding mountain slopes are well set with native trees from seedlings to old trees. Since 1934 has been a good seed producing year, it is probable that areas now in scattered pines will be thickly covered in pines in the near future. The elevation at which white pine is found in this city is 2200 to 2500 ft.

Blowing Rock, N.C. has one of the prettiest stands of native white pine growing in North Carolina. The pines do not cover a large area; but the majority are nearly uniform in size and are growing rapidly due to the soil and climatic conditions. There are also many planted pines on the Cone Estate, adjoining Blowing Rock, N. C. that are of considerable value, both aesthetically and commerially. The elevation here ranges from 3600 to 4000 ft.

Lenoir, N. C. had comparatively few trees of P. Strobus, in comparison with the two above mentioned towns; but the trees are well scattered over the Southern part of town, are planted, and are of great value from an aestetic point of view. There are two stands of native pines in Lenoir and adjoining the city. These stands are relatively small, but the planting was dense, and one plot, especially, is being carefully cared for in view of a future money crop. The elevation here ranges around 1200 ft.

White Pine in the "Douglas Stand"
at Biltmore, North Carolina.
U.S.Forest Service, -Neg.170,081

Ribes:

Ribes were found in all sections worked during 1934. Most of the Ribes were cultivated, but in some localities wild ribes grew within infecting range of white pine stands. Rarely were Ribes found growing wild below an elevation of 3500 feet but in a few cases wild bushes were found below that elevation.

Three species of Wild Ribes were reported during the summer. Muse found Ribes Cynosbati, Ribes rotundifolium, and Ribes missouriensis(?) in Avery County; Hansel found Ribes cynosbati in Madison County; Clapp found Ribes rotundifolium in Watauga County (Teague found Ribes cynosbati in Watauga County, also); Bolick found both R. rotundifolium and R. cynosbati in Burke county in the Linville Falls section; and it is possible that wild Ribes are to be found in the Cashiers section, although none were reported there.

Cultivated Ribes consisted of Ribes rotundifolium, Ribes grossularia, Ribes americanum, Ribes sativum, Ribes odoratum of aureum, and at one place in Asheville and one place in Highlands Ribes curvatum were found. In all cases Ribes of some species were found in gardens or fence rows somewhere within infecting range of pines. Some pine stands were free of Ribes, even in infecting range, but not a single community was worked that did not have Ribes within infecting range of some stand of white pine.

Very few of the cultivated Ribes were of great economic importance; but in a few places we found Ribes that were cared for and had an economic value to the owner. Garden spots were the location of the majority of Ribes found; but in a few places Ribes were found that had probably escaped from cultivation and were growing wild. One of the most interesting of these was on the Biltmore Estate, near Asheville, N. C. In years gone by an old house had stood at a certain spot on the Estate; but it has long since been torn down and the spot is now a white pine forest. Even the old shade trees, which were white pines, are standing, towering above the young pines; and in a marshy spot, probably where the garden was at one time, Ribes americanum are found in great numbers.

The cultivated Ribes found seem to grow and spread in most localities and at any elevation; but the climatic conditions seem unfavorable for most Ribes to fruit in this state. Hence, it was fairly easy to get the cooperation of a majority of the owners; for most of the people have never learned to like gooseberries and currants, and they do like the white pine forests.

Summary:

From observations made during the past summer it seems that cultivated Ribes are abundant in all sections of the state and are growing in or near white pine stands in all sections. The cultivated Ribes are numerous in certain localities above 3500 feet elevation; but often the Ribes are not near white pine stands and are not dangerous.

Ribes rotundifolium was the most abundant of the cultivated Ribes found, and often had quite a bit of fruit on the bushes, and were found in gardens as well as escaped.

Ribes sativum, both red and white currants were abundant in certain localities, and were usually found in gardens.

Ribes americanum was found mainly in gardens; but it has shown that it is adaptable for rapid spread in the wild if given the proper environment.

Ribes aureum or odoratum, as the case may be, was found in abundance in Asheville, N. C. in hedges and in lawns; and it has proven its ability to spread rapidly in most cases.

Other species of Ribes were found in less abundance and seem to be less of a problem than the above.

In this climate wild Ribes do not seem to thrive so well at the elevations at which the white pine grows; and our records show that few wild Ribes were pulled in comparison with the number of cultivated Ribes pulled.

Following are some totals on Ribes eradication in North Carolina:

N. R. A.

Acres worked.....	558,012
Wild Ribes pulled.....	14,823
Cultivated bushes pulled.....	85,230
Total Ribes eradicated.....	100,053
Man days labor used.....	2,699
Total costs.....	$16,979.53
Cost per acre worked.....	.02
Number counties work was done in..	10
Number cities worked.....	7

E. C. W.

Acres worked.....	24,598
Wild Ribes pulled.....	0
Cultivated Ribes pulled.....	269
Man days labor used.....	155
Total cost.....	$786.20
Cost per acre worked.....	0.03

E. C. W.

During May and June some work was carried on in the Pisgah National Forest, Grandfather Division, by P. A. Swarthout, working out of the Globe, N. C. C.C.C. camp. His personnel consisted of two CCC camp boys aiding in the SRC work.

Ribes:

No wild Ribes were found growing within 900 feet of white pine stands, and few cultivated Ribes were found. Some of the cultivated Ribes pulled were pulled on private land adjoining the National Forest boundary.

White pine:

The white pine in the Pisgah National Forest is scattered and in small groups. The pine does not extend very high up on the mountain slopes and is usually found along streams and in valleys.

N.R.A. Preeradication Work & Work Needed

After the scouting season and before the agents discontinued work for the winter some preeradication work was carried on and is being carried on now. Approximately 230,588 acres of white pines have been mapped in territory where 333,480 acres will need to be worked to clear the pine sites of ribes. In all these localities Ribes are found, either cultivated or wild, or both; and it is estimated that there is at least 300,000 acres yet to be mapped for pine stands. Thus there is yet in North Carolina approximately 600,000 acres to be worked with scouts for locating and eradicating Ribes; and the territory worked this year will need to be rechecked for bushes that were left or have sprouted from seed or improper eradication.

At least one more season will be necessary to complete the scouting and eradication work, and one season will be necessary to complete the 'mopping up' work, check territory, eradicated, and get the work in proper shape for safety from the Blister Rust.

Period work performed: Jan.1,1934 to Dec.31,1934

Date: January 10,1935

Name H.B. Teague

Title Agent-State Leader

RECEIVED
JAN 12 1935
U. S. DEPARTMENT OF AGRICULTURE
Accepted.....

S U P P L E M E N T
TO
NORTH CAROLINA GENERAL REPORT 1934
ON
WHITE PINE BLISTER RUST CONTROL WORK

COMPILED BY
H. D. TEAGUE
STATE LEADER
FEBRUARY 20, 1935.

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WHITE PINE BLISTER RUST CONTROL WORK

NORTH CAROLINA 1934

SUPPLEMENT TO GENERAL REPORT

The following pages of this report contain information to be used in connection with the General Report on Blister Rust Control Work conducted in North Carolina in 1934. This supplement, although not as complete as we would like to make it, contains a great deal of information not supplied by the original report and contains the data that we were able to assemble to date.

This information has been supplied by the District Supervisors in charge of crews last summer; by Dr. R. W. Leiby, representing the State Department of Agriculture; Mr. Roy G. Pierce, in his report of "White Pine Blister Rust Control-North Carolina-1932- Extract From Annual Report For The Southern Appalachian District-April 7, 1933". Information on the disease was obtained from the booklet "White-Pine Blister-Rust Control", by Lawrence B. Ritter, Junior Forester, June 1st, 1933, prepared by the United States Department of Agriculture, Bureau of Plant Industry, and Minnesota Department of Conservation, Division of Forestry, cooperating. White Pine acreage as given in J. A. Cope's 1930 Report by counties was used, also.

WHITE-PINE BLISTER RUST AND ITS CONTROL

Blister rust is a European disease. It was brought into the United States on young white-pine trees from Europe before there were any laws regulating the entry of plants into this country from foreign sources. The disease was first found near Philadelphia in 1905.

Since the discovery of this disease it has become established in the New England States, New York, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, Ohio, Michigan, Wisconsin, Minnesota, Iowa, Montana, Idaho, Washington and Oregon. In Minnesota it was first found near Taylors Falls in 1916. It is spreading slowly but surely into the other white pine areas of the State. It is now present in Aitkin, Anoka, Benton, Carlton, Cass, Chisago, Cook, Crow Wing, Hennepin, Isanti, Itasca, Kanabec, Lake, Mille Lacs, Morrison, Pine, St. Louis, Sherburne, Washington and Wright Counties.

WHITE-PINE BLISTER RUST IS A PARASITIC FUNGOUS PLANT

A fungus is a plant that does not have green coloring matter. Unlike green plants it does not make its own food but obtains it from living or dead matter. Blister rust is a parasitic fungus that lives in the bark of white-pine trees and in and on the leaves of currants and gooseberries.

BLISTER RUST CANNOT SPREAD FROM PINE TO PINE

Blister rust is spread by spores which might be considered very tiny seeds. Spores produced on the infected pine in the spring spread the disease to currants and gooseberries. Spores produced on the leaves of currants and gooseberries during the summer spread the disease to other currants and gooseberries. A third kind of spores produced on the currants and gooseberries in the late summer and early fall spread the disease to white pine. Only these "fall" spores can produce pine infection.

APPEARANCE OF BLISTER RUST ON WHITE PINE

On white pine, blister rust produces bark cankers. These cankers often take the form of spindle-shaped swellings of the bark with a yellowish discoloration around the edges. These discolored swellings are rarely recognized as blister rust by anyone other than a person trained in their identification. In the spring of the third or fourth year after infection takes place millions of dust-like spores are produced in orange-colored blisters about the size of navy beans on these cankers. These spores are carried by the wind many miles to the leaves of currants and gooseberries.

APPEARANCE OF BLISTER RUST ON CURRANT AND GOOSEBERRY BUSHES

The blister-rust disease will attack any currants and gooseberries, wild or cultivated. In the early summer it appears as orange-colored spots on the underside of the leaves of currant and gooseberry bushes. The spots produce spores that spread the disease to other nearby bushes. Later in the summer these spots are gradually replaced by brown hairlike growths which produce the spores that spread the disease to pine. Blister rust seldom spreads over 900 feet from currant and gooseberry bushes to white pine. However, the European or as it is commonly called, the cultivated black currant, may spread the disease to pines a mile or more distant. In Minnesota it is against the law to grow cultivated black currants or to plant any currants or gooseberries in areas where the white pine is an important forest tree.

BLISTER RUST ATTACKS AND KILLS ONLY THE WHITE PINE

White pine can be distinguished from other pines by its fine needles, three or four inches long, growing five in a cluster or bundle and by its cones, which are five to six inches long.

The blister-rust fungus enters the white pine through the needles, grows down into and lives in the inner bark. The infection may take place on the trunk of the tree or it may grow down a branch into the trunk.

The fungus robs the tree of its food and kills the bark. Thus, when it has completely encircled the trunk the flow of sap is shut off and the tree dies from girdling. Small trees are killed much more quickly than the larger ones.

UPROOT CURRANTS AND GOOSEBERRIES TO SAVE THE WHITE PINE

Blister rust can be controlled by uprooting all wild and cultivated currant and gooseberry bushes within 900 feet of white-pine trees. All cultivated black currants within one mile of white pine must be destroyed.

NORTH CAROLINA "INFORMATIONAL AND SERVICE ACTIVITIES" 1934

	Bolick[2]	Hansel[2]	Hearn[1]	Muse[2]	Teague[1]	Ferree	Perlmutter[2]	Clapp[2]	Total
* Meetings addressed	0	0	2	0	4	0	0	0	6
Attendance at meetings	0	0	8	0	75	0	0	0	83
Items published	6	0	0	5	5	2	3	3	24
Demonstrations placed	0	3	4	0	0	0	0	4	11
Initial interviews	518	202	687	211	489	0	288	43	2438
Follow up calls	47	15	77	38	75	0	5	0	257
Individuals instructed	5	200	4	0	16	0	0	0	25
Publications distributed	330	[illegible]	395	258	1275	0	400	104	2962
Posters placed	0	0	0	0	37	0	0	0	37

[1]Reports cover October-December inclusive
2 " " " only

* Radio Broadcasts:

August 17th, 1934, by H. B. Teague and Rowland Leiby, Jr.
October 26th, 1934, by Dr. R. W. Leiby

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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NORTH CAROLINA

WHITE PINE BLISTER RUST CONTROL AREA

Whereas, the State Board of Agriculture adopted July 15, 1934 a state quarantine governing the removal and growing of cultivated and wild currant and gooseberry bushes in North Carolina, and

Whereas, the said plant quarantine No. 2 empowers the Commissioner of Agriculture to establish Blister Rust Control areas so as to prevent the introduction of Blister Rust of white pine into the state. It is hereby ordered that, all that part of the state including and west of Surry, Wilkes, Caldwell, Burke and Rutherford counties be regarded until further notice as a Blister Rust Control Area.

Signed _____

William A. Graham
Commissioner

Raleigh, N. C.
January 23, 1935.

NORTH CAROLINA

BLISTER RUST CONTROL AREA

LEGEND

White pine distribution _____

*Wild Ribes distribution, as located to date: ○

Cultivated Ribes distribution:

Already located _____

Expected _____

*Usually above 3,500 feet.

NORTH CAROLINA

BLISTER RUST CONTROL AREA

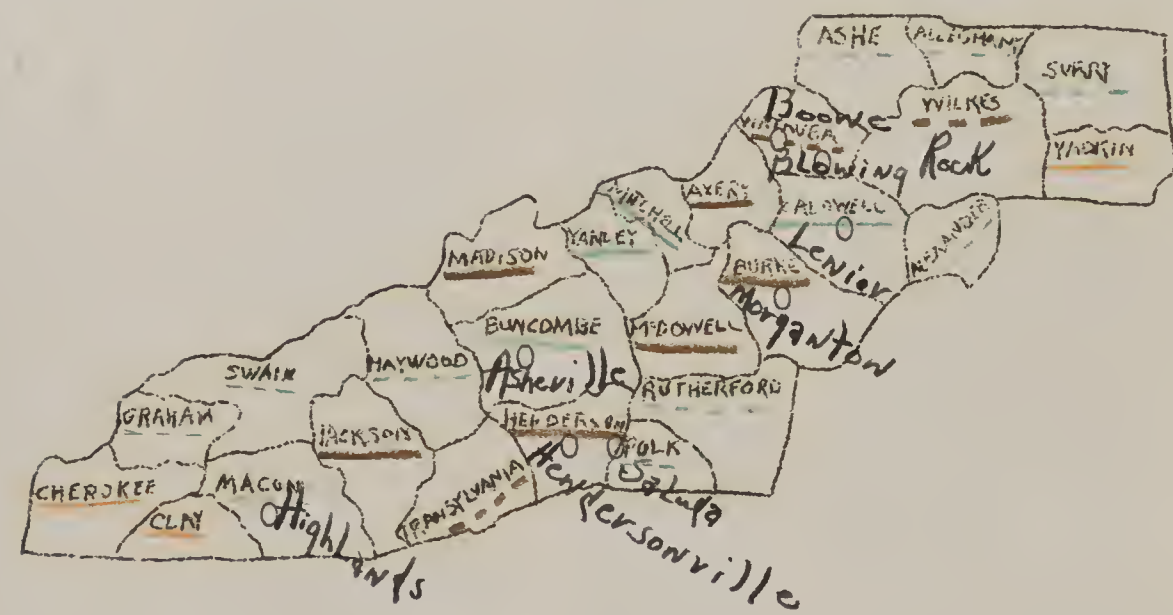
LEGEND

White pine acreage in North Carolina:

Acreage as given in J. A. Cope's 1930 Report _____
Other acreage located by preeradication survey _____
Estimated acreage of pine standslocated but not yet surveyed _____
Acreage of 5" and over pine as shown by crew reports (_____)

NORTH CAROLINA

BLISTER RUST CONTROL AREA



LEGEND

Cities scouted ____0____
Counties where scouting is completed _____
Counties partially completed _ _ _ _
Counties to be worked:
Entire county to be worked _____
Part of county to be worked _____
Counties that may be entirely eliminated _____

C O P Y

Amendment No. 2
Washington, D. C.

AMENDMENT TO
MEMORANDUM OF UNDERSTANDING
EFFECTIVE July 1, 1932
Between

THE UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF PLANT INDUSTRY, AND THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE

Cooperative Work in Controlling White Pine Blister Rust in North Carolina.

- - - - - - - - - - - - - - -

The undersigned mutually agree that the memorandum of understanding between the United States Department of Agriculture, Bureau of Plant Industry, and the North Carolina Department of Agriculture effective July 1, 1932, to continue in effect until June 30, 1933, shall be continued in full force and effect in all its provisions for the two year period ending June 30, 1935 with the exception of paragraphs D-2 and D-6 which shall be amended to read as follows:

D-2. That this memorandum of understanding shall take effect July 1, 1933 and continue in effect until June 30, 1935, provided that either party may terminate the agreement at any time by a written statement to that effect 30 days in advance of the date of termination desired.

D-6. That for the two year period, July 1, 1933 to June 30, 1935 the North Carolina Department of Agriculture and its cooperators will expend about $500.00 and the Federal Government in behalf of the United States Bureau of Plant Industry about $30,000.00 in connection with the work herein provided for, provided, however, that the maximum expended by the Federal Government shall not exceed $31,000.00.

March 27th, 1934.

Wm. A. Graham,
Commissioner, North Carolina Department of Agriculture.

April 13, '34.

W. F. Kellerman
Acting Chief, Bureau of Plant Industry, U. S. Deptl of Agriculture.

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NURSERIES HAVING WHITE PINES IN NORTH CAROLINA

Name	Address	County	No. of white pines
Wayside Nursery	Biltmore	Buncombe	Less than 50
Liberty Street Nur.	"	"	"
C. D. Beadle Nursery	"	"	100 or more
Nettlewood Nurseries	"	"	Less than 50
Tandy Nurseries	Skyland	"	"
R. S. Steadman	Hendersonville	Henderson	"
Poinsette Gardens	Zirconia	"	"
Carolina Nursery	East Flat Rock	"	"
Champion Fibre Co.	Canton	H aywood	Several beds of seedlings and some larger trees
Blue Ridge Nursery	Marion	McDowell	Less than 50
Gardens of Blue Ridge	Ashford-Pineola	Avery	100 or more
Anthony Lake Nursery	Pineola	"	50-100
Watauga Nurseries	Shulls Mills	Watauga	50-100
Wildwood "	Blowing Rock	"	Less than 50
Valdesian "	Bostic	Rutherford	50-100
Greenhill Nurseries	Rutherfordton	"	Less than 50
Mecklenburg "	Charlotte	Mecklenburg	"
Harky Bros. "	"	"	"
Steele Creek "	"	"	"
L. A . Reynolds "	Winston-Salem	Forsyth	"

WHITE PINE BLISTER RUST
Regulations and Rules
of the
N. C. Department of Agriculture

Eradication of Wild and Cultivated Currant and Gooseberry Plants to Prevent the Establishment or Suppress an Infection of the Blister Rust of White Pine in North Carolina.

In order to prevent the establishment in North Carolina of a dangerous and injurious disease of White Pine trees known as the White Pine Blister Rust Cronartium ribicola; and since such prevention is secured by eradicating wild and cultivated currant and gooseberry plants, the alternate hosts of the Blister Rust, which may be growing within an infective distance of white pine.

Now, therefore, the Board of Agriculture by virtue of its authority, does adopt the following rules and regulations, governing the movement of white pine trees within the state, and the eradication of wild and cultivated currant and gooseberry bushes which may be considered a menace to white pine by the Commissioner of Agriculture or his officers.

Reg. 1. When the Commissioner of Agriculture shall determine that there are five-leafed pines now growing in any area in the State, or that such pines are to be so grown by a nursery or are to be planted for reforestation purposes in such area as a "Blister Rust-Control Area" and to prescribe its boundaries.

Reg. 2. All wild and cultivated currant and gooseberry plants growing in any Blister-Rust Control Area are hereby declared to constitute a public nuisance and the Commissioner of Agriculture or his agents are authorized to destroy such plants wherever found.

Reg. 3. In the case of cultivated currant and gooseberry plants, (other than those growing or apparantly abandoned or unoccupied premises) the owner of the plants shall be notified by an agent of the said commissioner at least ten days in advance of the date on which such plants are to be destroyed, and said owner shall have the right of appeal from the agent direct to the Comissioner of Agriculture if desired.

Reg. 4. No person, firm, or corporation shall knowingly plant any currant or gooseberry plants of any kind or variety within any such blister rust control area unless a special permit shall have been issued therefore by the Commissioner of Agriculture; nor shall any person, firm or corporation transport such plants into said area from any other part of the State without such a special permit.

Reg. 5. In order to prevent the establishment of centers of blister rust infection, the Commissioner of Agriculture or his agents are authorized to destroy five-leafed pine trees either (a) when said trees are found infected with blister rust, or (b) when the cultivated currant and gooseberry plants in the vicinity are of more value than the five-leafed pines, or (c) when the cost of removal of the wild and cultivated currant and gooseberry plants within an infective distance thereof would be greater than the value of the white pine trees involved.

Reg. 6. A nursery shall not move five-leafed pines within the State unless a permit shall have been issued therefor by the Commissioner of Agriculture or his agents. Such permits may be issued on the following conditions:

> That the five-leafed pines to be moved shall be grown from seed in a location within 1 mile of which there have existed since the time of planting said seed no European black currant plants and within at least 1,500 feet of which there have existed since the time of planting said seed no currant or gooseberry plants of any size or variety which in the judgment of the inspector would involve risk of spread of the white pine blister rust. A Ribes-free zone greater than 1,500 feet in width may be required when necessary in the judgment of the inspector to ensure freedom from infection. The requirement that the Ribes-free conditions described must have been maintained since the time of planting the seed may be waived pending the completion of Ribes-eradication in the environs of the nursery, in the case of premises which, on account of their great distances from known points of blister-rust infection and the relative scarcity of susceptible Ribes in the vicinity of the five-leafed pine stock represent in the judgment of the Commissioner of Agriculture little or no risk of being involved in blister-rust infection.

Reg. 7. Any five-leafed pines or currant or gooseberry plants found to be moving ~~or to be moving~~ or to have been moved with-

in this state in violations of these regulations, or into this state in violation of regulations issued by the Secretary of Agriculture of the United States Department of Agriculture under the authority of the Plant Quarantine Act of 1912, shall be subject to seizure, destruction, or such other disposition as shall be determined by the Commissioner of Agriculture.

Reg. 8. Any person violating these regulations or rules, or any person prohibiting their execution by the Commissioner of Agriculture or his designated agents, shall be regarded as a violator of the Plant Pest Act of the North Carolina Department of Agriculture and shall be prosecuted in accordance with the provisions of that Act.

These Regulations and Rules shall be effective immediately upon adoption by the Board of Agriculture.

William A. Graham,
Commissioner of Agriculture

R. W. Leiby
Entomologist

Adopted Raleigh, N. C.
July 25, 1934.

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PLANT DISEASE CONTROL

B.R.C.-5B

U. S. DEPARTMENT OF AGRICULTURE
Division of Plant Disease Eradication

STATISTICAL REPORT OF RIBES ERADICATION WORK UNDER N.R.A.

State: North Carolina

Year: 1934

										Totals for State
Number ~~Name~~ of District Agents				7						
No. ~~towns~~ worked (counties)				10 counties, 67 towns						
Period work performed				5/1 - 12/31						
No. men employed				50						
Results of Ribes Erad. Work	Initial Erad.	Total acreage worked		558,012						
		Acreage pine protected		458,152						
		Ribes Pulled	Wild	14,823						
			Cult.	85,230						
		Total man hours*		14,656						
		Total cost of Ribes erad.	Gov't.	$16,979.53						
			State	$ 480.00						
	Re-erad.	Total acreage worked								
		Acreage pine protected								
		Ribes Pulled	Wild							
			Cult.							
		Total man hours*								
		Total cost of Ribes erad.	Gov't							
			State							
	Initial and Re-erad.	Total acreage worked								
		Acreage pine protected								
		Ribes Pulled	Wild							
			Cult.							
		Total man hours*								
		Total cost of Ribes erad.	Gov't							
			State							
Supervisors and Checkers	Total man hours			6,936						
	Total cost		Gov't							
			State							

*List the total time of laborers, sub-foremen, foremen, and scouts.
Under "Total Cost of Ribes Erad." include all expenditures for wages and expenses.

Note: Total cost of Ribes Eradication includes all expenditures for year 1934. See Table 5.

Table 1

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Table 2. Results of Preeradication Survey

White Pine Areas, 1934 N.R.A. Funds

County	Agent	No. of Projects	Acres White Pine Planting sites	Acres white pine to be protected	Acres to work			Estimated man days work required			Man days used			Costs*				Percent Preeradication Completed on 12/31/34
					Crew	Scout	Total	Crew	Scout	Total	Asst.	Mapper	Total	Asst.	Mapper	State	Total	
Caldwell	J. G. Bolick	1	50,000	35,000	0	50,000	50,000	0	200	200	0	15	15	0	125.00	0	125.00	
Ashe, Watauga	J. B. Clapp	1	100,000	60,000	0	100,000	100,000	0	250	250	0	5	5	0	30.00	0	30.00	
Buncombe	C. J. Hensel J. A. Whitman(Scout)	1	35,000	25,000	0	35,000	35,000	0	175	175	20	6	26	125	50.00	0	175.00	
Transylvania, Macon, Graham	C. J. Hearn	1	40,000	21,840	0	40,000	40,000	0	175	175	0	30	30	0	225.00	0	225.00	
Yancey Mitchell	William Muse	1	20,000	14,416	0	20,000	20,000	0	150	150	0	27	27	0	225.00	0	225.00	
Yadkin, Wilkes, Alleghany, Surry	Frank Perlmutter	1	25,000	10,850	0	25,000	25,000	0	175	175	0	12	12	0	100.00	0	100.00	
Alleghany, Surry	C. J. Hearn	2	31,380	31,380	0	31,380	31,380	0	200	200	0	35	35	0	397.87	0	397.87	
Buncombe	W. B. Teague	1	32,100	32,100	0	32,100	32,100	0	200	200	0	10	10	0	75.00	0	75.00	
Totals		9	333,480	250,588	0	333,480	~~250,588~~ 333480	0	1,525	1,525	20	140	160	125	1,227.87	0	1,352.87	

Note: Acreage reported by Teague in Buncombe may include some reported by Whitman.

*All costs included in Table 5.

Table 4. Local Control - Results of Ribes Eradication, 1934 E.C.W.

No. of Camps	Forest or Park and counties worked	No. of Projects	No. of Planting sites	Acres of White pines Protected	Acres worked			Ribes Pulled				Man days labor used			Man days supervision-checker, other than in field.	Costs*			Total cost per acre	Ownership
					Crew	Scouts or Agent	Total	Crew	Scouts or Agent (Cult)	Total	Ribes per acre	Crew	Checker or Scout	Total		Labor	Supervision-checker and expense	Total		
1	Pisgah	33 ~~1~~	~~33~~	8,801	0	24,598	24,598	0	269	269	0.01	117	38	155	0	$421.20	$365.00	$786.20	$0.032	Federal
1		1	33	8,801	0	24,598	24,598	0	269	269	0.01	117	38	155	0	$421.20	$365.00	$786.20	$0.032	

*Not included in Table 5.

PISGAH NATIONAL FOREST, NORTH CAROLINA

Grandfather Division

Summary for 1934

The following is a letter from P.A. Swarthout to Mr. Roy G. Pierce dated June 21, 1934.

"I am finishing the work on the Grandfather Division today. I will start for the Unicoi Camp on the Unaka tomorrow morning.

Summary of blister rust work on the Grandfather for 1934.

Total Ribes pulled - - - -- - - - - - - - -	269 bushes
Total white pine protected - - - - - - - -	8,801 acres
Total area worked by scouts - - - - - - - -	24,598 "
Total CCC man days - - - - - - - -- -- - -	117
Total days supervision - - - - - - - - - -	38

The locations of Ribes that we were unable to pull due to failure of the owners to cooperate are listed below

J. Bradshaw	Mulberry	3	currants	17	gooseberries
C.H. Ferrel	"	2	"	10	"
Victor Coffey	"	25	"	3	"
F.C. Perkins	Boone Fk.			4	"
Roab Martin	Stapps Br.	3	"		
Henry Harrison	Globe			54	"
W.M. Austin	Globe Mortimer Rd.	20	"	15	"
S. Gragg	Gragg Creek			1	"
M. Bolic	Pack Hill Ridge	3	"		
Will Moore	Globe	53	"		

These owners prefer to wait until later to have their bushes pulled. It will be possible to get all of them with little difficulty in case of infection.

Sincerely,

P.A. Swarthout"

Table 5. Local Control - Result of Ribes Eradication & Scouts, 1934 N.R.A.

County	Agent	No. of Projects	Acres white pine protected	Acres worked by Scout	Acres worked by Total	Ribes bushes pulled: Scout or Agent Wild	Scout or Agent Cult.	Total Wild	Total Cult.	Total all Ribes	Ribes per acre	Man days labor used: All days 8 hr. days: Crew of Scouts & Scout	District Agent	Total	Man days supervision State leader	Costs: Labor Pay roll	Scouts Sal.	Dist. Agents Sal.	State Leader Sal.	*Expenses Supplies & Equip. Est. Prior to 6/30/34	Total	Per acre worked	Owner
Burke McDowell	I. G. Bolick	55	15768	63072	63072	132	11000	132	11000	11132	0.18	218	137	355	6	746.82		585.37		358.20	1,690.39		Private
Watauga	H. R. Clapp	40	2911	11569	11569	4181	2766	4181	2766	6947	0.6	142	78	220	6	471.60		404.89		206.24	1,082.73		"
Madison	C. J. Hensel	20	47986	191944	191944	3673	19638	3673	19638	23311	0.12	375	158	533	6	1,124.40	283.86	699.96		1,054.26	3,162.48		"
Henderson, Jackson, Transylvania	H. S. Teague C. H. Hearn	26	4031	212676	212676	0	38652	0	38652	38652	0.17	590	160	750	6	1,276.18	625.00	685.27		1,070.01	3,656.46		"
Avery	William P. Muse	27	53169	10931	10931	6837	4357	6837	4357	11194	1.0	227	153	380	6	763.20		624.95		344.92	1,734.07		"
Wilkes	Frank Perlmutter	45	6565	20740	20740	0	1959	0	1959	1959	0.09	155	81	236	6	489.15		404.[illegible]		270.48	1,164.52		"
(Cities)																							
Asheville, Lenoir, Blowing Rock,	H. B. Teague	19	28090	47080	47080	0	6858	0	6858	6858	0.11	125	100	225	6	25[illegible].50	168.14	699.96		684.14	1,8[illegible].74		"
Biltmore Forest (Hendersonville, Flat Rock and East Flat Rock and Saluda reports included in Henderson County reports.)																							
State Leader															Subtract 28 days				1,053.45	441.87	1,495.32		
Other Expenses																				1,185.82	1,1[illegible]5.82		
Total		232	158,520	558,012	558,012	14,823	85,220	14,823	185,230	100053		1,832	867	2,699	28 3/8 ~~42~~	5,128.27	1,077.00	4,105.29	1,053.45	5,015.94	16,979.53	.02	

* All expenses other than salaries. No special crew used for eradication.

Table 6. Local Control Summary of Local Control in 1934 by Agencies

Agencies	No. of Projects	Planting Site	Acres white pine protected	Acres worked			Ribes pulled							Ribes per Acre	Man days labor used			Man days supervision State leader	Costs				Supplies & Equipment & all other expenses	Total Cost	Cost per acre worked
							Crew		Scout or Agent		Total		Total all Ribes						Labor	Supervision					
				Crew	Scout	Total	Wild	Cult.	Wild	Cult.	Wild	Cult.			Crew	Scout Agent Checker	Total			Scouts	District Agents	State Leaders			
E. C. W.	1	3X3	8,801	0	24,598	24,598	0	0	0	269	0	269	269	0.01	117	38	155	0	421.20		365.10			786.20	0.032
N. R. A.	9	217	458,152	0	558,012	558,012	0	0	14,823	85,230	14,823	85,230	100053	0.1	1,832	867	2,699	42	5,128.27	1,077.00	4,105.29	1,053.45	5,615.94	16,979.53	.02
Total	10	~~235~~ 255	466,953	0	582,610	582,610	0	0	14,823	85,499	14,823	85,499	100,322	0.11	1,949	905	2,854	42	5,549.47	1,077.00	4,470.29	1,053.45	5,615.94	17,765.73	0.052

NORTH CAROLINA

WHITE PINE BLISTER RUST CONTROL WORK

CITIES AND VILLAGES

1934

By H. B. Teague, State Leader
Blister Rust Control
February 16, 1935

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WHITE PINE BLISTER RUST CONTROL WORK IN NORTH CAROLINA

BY CITIES AND VILLAGES IN 1934.

FOREWORD

Following is a report of Blister Rust Control Work conducted in cities and villages, only, in North Carolina during the Summer and early Fall of 1934. This work conducted in cities can not be wholly separated from the work done in rural districts, but the majority of the urban districts are accounted for in this report and those portions left out are about evenly matched by the small portions of outlying rural sections that may be included in this report.

At the beginning of the season, the writer was crew leader of a crew of scouts locating and destroying Ribes (gooseberry and currant bushes) in the farming sections in Henderson County. Shortly after the crew had begun work in this county, a rainy season threatened to stop the work for several days because the country dirt roads were too slick to travel. In order to continue with the work, the crew began scouting for Ribes in Hendersonville. We found that a crew working in cities worked much slower than one in rural districts, and the type of work was much different because of the social enviroment found there.

This new type of work gave Dr. Leiby, State Entomologist and Collaborator, the idea of establishing a special crew for scouting in the urban and adjoining thickly populated districts.

ORGANIZATION AND PERSONNEL

All Blister Rust Control Work, both city and rural, was directed by Dr. R. W. Leiby, State Entomologist of North Carolina, cooperating with

Pathologist, being Regional Supervisor of Blister Rust Control work in the Southern Appalachian District. Mr. J. A. Ferree, State Leader, field director of the work in the state supervised the crews from the Blister Rust Control Office in Asheville.

H. B. Teague was the crew leader of the crew working in Henderson County. The crew was composed of the following scouts: Paul J. Johnson, Charles W. Orton, John Brooks, and Rowland W. Leiby, Jr. This crew worked in Hendersonville, Flat Rock, East Flat Rock, Saluda, and other parts of Henderson County. Only the work of Hendersonville was kept separate from that done in the farming sections, and a complete report of the work done in the villages prior to July 17th, 1934, can not be obtained.

On July 19th, a separate crew composed of H. B. Teague, crew leader; Rowland W. Leiby, Jr., Scout; and Robert Gibson began work in Biltmore and Biltmore Forest, Asheville, Grace, and other sections near Asheville. During the Summer work was conducted in Blowing Rock, N. C. and in Lenoir, N. C.

WHITE PINE

Hendersonville:

In Hendersonville and the sections around Hendersonville both planted and native White Pine is found in abundance. The altitude of the city is about 2300 feet elevation, and the climate is ideal for summer vacationists. A number of the homes are owned by people who spend only a short time during the summer in Hendersonville; and the more wealthy own estates ranging in size from a few acres to several hundred or thousands of acres.

The native White Pine is abundant in the outlying districts and in most cases have been preserved because of their beauty. In addition to the native Pine, there are found hundreds of planted Pines along the streets, on the lawns, and in or bordering places of public recreation. In each case the age of the Pines

varies from young seedlings to old pines sixty or more years.

As a whole, the people of Hendersonville and vicinity value the White Pine more for aesthetic purposes than for commercial reasons. The Pines present are cared for and additional plantings are being made each year. One incidence of a planting to be made in Henderson County on the Kanuga Lake property includes several acres of abandoned farm land, as well as spot planting at various places on the 1400 acre tract. The seedlings for these plantings are to be taken from the numerous stands of native pine found on the property.

Many other cases of White Pine plantings in this section could be sited if time permitted. The abundance of seedlings in and around Hendersonville is shown by the number of Pines ranging from one to seven years on a plot of about an acre where the writer and one of his scouts counted as nearly as possible the trees at that time present. There were about twenty large trees present about thirty years of age, and from these seed have been scattered over the entire area. We counted in excess of fifteen thousand seedlings, and on visiting the plot two weeks later we found hundreds of new seedlings that had sprouted and were pushing their way through the soil to join the already overcrowded condition present.

Just how many of these seedlings will be spared or utilized in the future is not known. The caretaker of the place mentioned above informed us that the owner had all seedlings destoryed on that plot about eight years ago. Observations show that thousands of White Pine seedlings might easily be obtained free or at small cost for making additional plantings in sections where White Pine is not now present.

Asheville:

In the Asheville section we included Biltmore Forest, Biltmore, Grace, and other sections bordering these places. In this included the famous plantings made by George Vanderbilt during and after the time he conducted the first School of Forestry in the United States.

The White Pine in Asheville is found mostly in the Southern, Eastern, and Northern parts of town. Asheville and vicinity is a well known Summer resort and has an elevation about the same as that found at Hendersonville, ranging from 2200 to about 2600 feet. Native Pines grow well and reproduce readily, but social conditions have altered the natural conditions in the section. The majority of the Pines are planted, are few per acre, and are distributed over the entire territory worked. The value of the Pines, being more for beautification than the same Pines would have been commercially, made the estimated acreage in Pine more in cities than the same number of trees in rural sections would have been. We found that the Pine was a popular tree here and that some planting is done each year.

Where we found native Pines growing in wooded areas, natural reproduction was evident by the young trees in the open places. The size and age of the pines show that most of the plantings have been recent and that old nati ve trees have been removed, probably for commercial reasons.

Blowing Rock:

White Pine is well distributed throughout the limits of Blowing Rock and some sections nearby. Most of the stands are native, second growth timber, and range from one to thirty years of age. Planted Pine is found throughout the village, especially around the homes owned by people spending only the Summer months in that locality. The village has a small population residing there throughout the entire year; but during the Summer months hundreds of people move to their Summer homes there, and thousands visit the town for short vacations, over night, or for a week-end.

The aesthetic value of the White Pines found in Blowing Rock probably is greater per tree than that found in any other locality worked during the Summer of 1934. In most cases the Pines are well cared for whether planted or native, and many trees are used for shade or mixed with hemlock or rhododendron in making hedges along lawns or driveways.

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One planting of noteworthy interest is located on the Cone estate just out of the city limits of Blowing Rock. The estate contains about 3000 acres, and ranges from about 3700 feet to 4100 feet elevation. Most of the Pine stands are at or below 3800 feet. This ranges from 100 to 200 feet more elevation than that of Blowing Rock which is about 3600 feet.

It is evident that the Pines in Blowing Rock are well liked by the people, will be protected; and in the opinion of the writer future plantings will be made. No cases can be sited at this time however.

Lenoir:

Although Lenoir is only 23 miles from Blowing Rock, and Blowing Rock has an elevation of about 3600 feet, the elevation of Lenoir ranges about 1200 feet. Lenoir is situated in a county that has a great deal of Pine, but the Pine stands in the town are few and well-scattered over the Eastern section. The native Pines are found in two main stands both privately owned. One of these stands ranges from young seedlings to about twenty five years of age and the owner is looking forward to the maturity of his Pines for a money crop. Another stand of native Pines of about fifty acres is owned by several private owners and most of the Pines are small. One owner, however, thinking more of her Pines has preserved her Pines and the size and age ranges from small seedlings to trees about sixty years old. Other Pines in Lenoir are mostly planted and the few trees used for aesthetic purposes are scattered throughout most of the area worked.

One planting of interest islocated on the Davenport College property, and most of the trees range from fifteen to forty years of age. This planting looks as if it had not received proper attention in past years; but the caretaker of the grounds informed us that they thought a great deal of their pines and were caring for them at the present.

RIBES

Ribes stands for gooseberry and currant bushes. Both gooseberries and currants were found in all of the cities worked. No wild Ribes were located near White Pines in any of the cities, but it is believed that Wild Ribes grow near White Pines in the vicinity of Blowing Rock. At the time we were working in Blowing Rock most of the wild Ribes had already shed their foliage. Since no wild bushes were found in any of the other places worked and the elevation is must lower than that at which we usually find Ribes in North Carolina, it seems safe to assume that no wild Ribes are prevalent in those districts.

In some cases, however, we find that cultivated Ribes had escaped cultivation. In one instance in Hendersonville we found a red currant bush growing on the property of Mr. John Perry, in the edge of the woods bordering his lawn and outside of his garden. Another place where Ribes had escaped cultivation was found on the Biltmore Estate (the well known Vanderbilt Estate) at an old house site which is now covered and surrounded by thickly planted White Pines. The Ribes are American black currants, R. americanum; and gooseberries, R. rotundifolium. The soil seems to be rich and damp. The shade conditions being dense has retarded the growth of the R. rotundifolium; and the bushes are small, being about twelve to eighteen inches high and growing mostly in single stems.

Soil and shade conditions seem to favor R. americanum, and these bushes have spread densely throughout a small area. These bushes were low and seemed to be spreading from roots as well as stems. Neither species seemed to have borne fruit recently, but we were not able to determine definitely about the currant bushes.

PUBLICITY

During 1934 the cooperation of private owners of cultivated Ribes was unusually good. This was due largely to the publicity furnished by newspapers,

radio, U. S. Department of Agriculture bulletins, and to courteous personal contact and explanation on the part of the scouts.

Newspaper publicity was given locally and short informal articles were submitted on the disease, White Pine Blister Rust, Cronartium ribicola; the methods by which the disease propagates and spreads; and the danger of the disease to White pine trees.

On two occasions radio messages were broadcast over Station WWNC, Asheville, North Carolina in regard to Blister Rust, its control, and the work being done in this state at present. The first broadcast was presented by H. B. Teague and Rowland Leiby, Jr., on August 17th. Another broadcast was presented by Dr. R. W. Leiby, State Entomologist, on October 26th.

Other information was given out by the scouts locating and eradicating gooseberries and currants. About 2000 copies of U. S.D. A. Miscellaneous Publication #22 were distributed to private owners, and hundreds of interviews were made in addition to those reported of people having Ribes.

SCOUTING AND ERADICATION DATA

The scope of our work will be shown more clearly by the following maps, tables, and other information. We regret that a more complete record of work done in cities and villages was not kept; and some of the data given here does not tally with what for cities shown in Table Five of the Index to the North Carolina Annual Report for 1934.

Large scale maps of these cities were not available in some cases, and more than one copy could be obtained for Asheville only. Copies of the maps of the Asheville section have been mailed previously to Dr. Leiby, and to Mr. Pierce, one copy being retained in this office. The maps I have included in this report are general, and the object is to give some idea of what work has been done, and what we plan to do in the future. Our future work has not been definitely outlined as yet.

NORTH CAROLINA

BLISTER RUST CONTROL AREA

Legend

Cities where Ribes scouting and eradication work has been done.....o
Cities to be worked in the future.....*
Cities, or villages, worked but report not kept separately from that of rural districts.....●

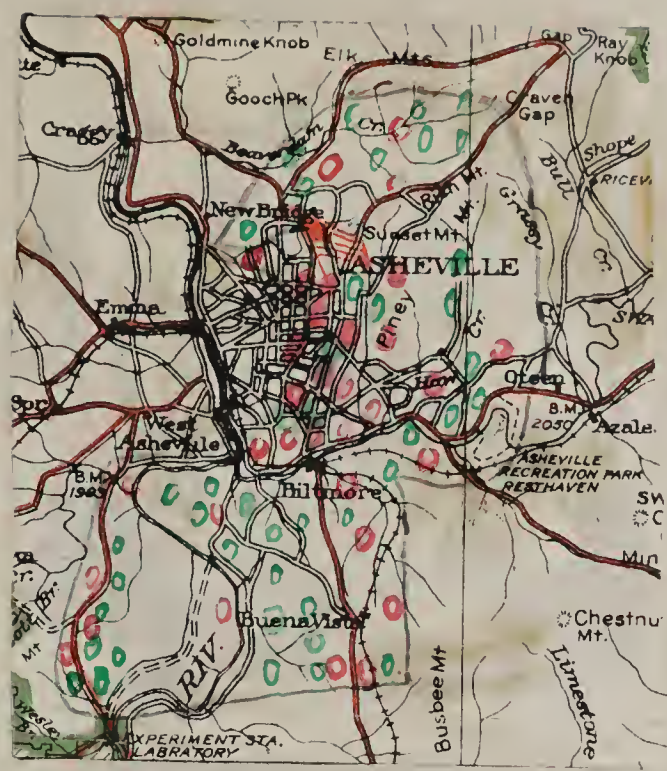
NOTE: There are probably other villages to be worked, but preeradication surveys have not been made of them to date. There are cities outside of this BRC area that warrant working also. Pinehurst, N. C. has been mentioned, but not enough data is available at present.

LEGEND
Area worked _____
Pine distribution _____
Ribes distribution _____

HENDERSONVILLE, N. C.

Pine acreage	900
Total acreage worked	2,600
Ribes eradicated:	
R. rotundifolium (gooseberries)	2,547
R. sativum, (red currants)	110
R. americanum, (american black currants)	0
R. aureum or odoratum, yellow flow. black cur.)	0
Total Ribes eradicated	2,657
Initial interviews	45
Calls back	25
Total interviews	70
Owners having Ribes eradicated	39
Owners whose bushes have not been removed	6

NOTE: Pine acreage large because of distribution of valuable planted pine having beautification value far above commercial value.



LEGEND

Area worked
Pine distribution
Ribes distribution

ASHEVILLE, N. C.

Pine acreage	21,860
Total acreage worked	40,780
Ribes eradicated: R. curvatum (gooseberries)	73
R. rotundifolium (gooseberries)	4,546
R. sativum, (red currants)	936
R. americanum, (american black currants)	4
R. aureum or odoratum, (yellow flow. black cur.)	1,109
Total Ribes eradicated	6,668
Initial interviews	239
Call backs	150
Total interviews	389
Owners having Ribes eradicated	219
Owners whose bushes have not been removed	20

NOTE: Pine acreage large because of distribution of valuable planted pine having beautification value far above commercial value

LEGEND
Area worked
Pine distribution
Ribes distribution

BLOWING ROCK, N. C.

Pine acreage	2,000
Total Acreage worked	4,500
Ribes eradicated:	
R. rotundifolium (gooseberries)	25
R. sativum, (red currants)	97
R. americanum, (american black currants)	0
R. aureum or odoratum, (yellow flow. black cur.)	2
Total Ribes eradicated	124
Initial interviews	19
Calls back	5
Total interviews	24
Owners having Ribes eradicated	13
Owners whose bushes have not been removed	6

NOTE: Pine acreage large because of distribution of valuable planted pine having beautification value far above commercial value.

LEGEND
Area worked _____
Pine distribution _____
Ribes distribution _____

LENIOR, N. C.

Pine acreage	800
Total acreage worked	1,800
Ribes eradicated:	
R. rotundifolium (gooseberries)	34
R. sativum, (red currants)	10
R. americanum (american black currants)	0
R. aureum or odoratum, (yellow flow. black cur.)	22
Total Ribes eradicated	66
Initial interviews	7
Calls back	2
Total interviews	9
Owners having Ribes eradicated	7
Owners whose bushes have not been removed	0

NOTE: Pine acreage large because of distribution of valuable planted pine having beautification value far above commercial value.

NORTH CAROLINA CITY ERADICATION 1934.

1	2	3	4	5	6	7	8	9	10	11
City	Projects	Total Acreage	*Ribes Pulled	#Man Days	**Costs					
					Labor	Scout	Dist. Sup.	Other exp.	Total	Cost per acre
Hendersonville	1	2,600	2,657	28	54.00	00.00	56.25	25.00	135.25	5.2¢
Asheville	13	40,780	6,668	171	256.50	100.00	500.00	400.00	1256.50	3.1¢
Blowing Rock	4	4,500	124	36	00.00	50.00	125.00	160.00	335.00	7.4¢
Lenoir	2	1,800	66	18	00.00	18.14	74.96	124.14	217.24	12.0¢
Totals	20	49,680	9,515	253	310.50	168.14	756.21	709.14	1943.99	4.0¢

* No Wild found. All Ribes eradicated were cultivated.
** Estimated.
# Including supervision.

City	Pine Acreage
Hendersonville	900
Asheville	21,860
Blowing Rock	2,000
Lenoir,	800
Total	25,560

Total	50

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S O U T H C A R O L I N A

ANNUAL REPORT

OF

WHITE PINE BLISTER RUST CONTROL

IN

SOUTH CAROLINA - 1934

By J.H. Dean

Annual Report of White Pine Blister Rust Control in South Carolina, ending October 27, 1934

FOREWORD

On March 28, 1934, an agreement was drawn up between The United States Department of Agriculture, Bureau of Entomology and Plant Quarantine (formerly Bureau of Plant Industry), The South Carolina Commission of Forestry, and The South Carolina Crop Pest Commission to conduct cooperative work in controlling White Pine Blister Rust in South Carolina. The object of the cooperative work is to provide for scouting and inspection for the White Pine Blister Rust in South Carolina, and for the application of such methods of eradication or control as may be necessary. In 1933 the Federal Government had no cooperative agreement with South Carolina officials, hence no work was carried on in the State or private lands, except in connection with the scouting on private lands. Work in 1933 was begun on the Nantahala National Forest.

PERSONNEL

Mr. H. A. Smith, State Forester, Columbia, S.C. is the cooperator for the program. He is now collaborator in the United States Forest Service. Mr. Smith is responsible for the administrative direction and supervision of Cooperative Blister Rust Control work in this State.

Dr. G. M. Armstrong, Head, Botany and Bacteriology Division, and Director of South Carolina Crop Pest Commission, Clemson College, S.C. is responsible for the enforcement of State laws pertaining to plant pest control. He also cooperates in the control program through the enforcement of the state laws as may be necessary for the effective prosecution of Blister Rust Control work.

The work was placed in charge of J. T. Dean, State Leader; the State Leader is ultimately responsible for the completion of the present campaign to control this White Pine Blister Rust in his state. The duties of a State Leader can be divided into three types; namely, administration, supervision, and cooperation. In short, the responsibility of the State Leader is to accomplish the control of this disease within his state, economically as well as effectively.

Labor to assist the State Leader was selected from the National Re-employment office in the respective counties as they were worked. These men were trained by the State Leader to identify Ribes and White Pine Blister Rust. The laborers were paid with N.R.A. funds.

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF PLANT INDUSTRY, THE SOUTH CAROLINA COMMISSION OF FORESTRY, AND THE SOUTH CAROLINA CROP PEST COMMISSION.

Cooperative work in Controlling White Pine Blister Rust in South Carolina.

The object of the cooperative work outlined herein is to provide for scouting and inspection for the white pine blister rust in South Carolina and for the application of such methods of eradication or control as may be necessary.

A. The United States Department of Agriculture, Bureau of Plant Industry Agrees:

(1) To pay the salaries and necessary travel expenses of one or more men for such time as may be necessary to determine the occurrence and limits of the spread of this disease in South Carolina, and under the authority of the South Carolina Commission of Forestry and its cooperators shall cooperate in the eradication of the disease wherever found.

(2) To assume responsibility for technical instruction of employees engaged in these investigations.

(3) To conduct such experiments and demonstrations as may be desirable for the purpose of securing effective control of the white pine blister rust in South Carolina.

B. The South Carolina Commission of Forestry Agrees:

(1) To assume the administrative direction of the aforesaid employees of the United States Bureau of Plant Industry.

(2) To conduct such control activities as may be agreed upon each year by the cooperating parties.

(3) To prepare an annual report of all blister rust control work performed under the provisions of this memorandum, one copy of which will be delivered to each of the cooperating parties.

(4) To submit in prescribed form to the United States Bureau of Plant Industry a monthly report of salaries and expenses paid by the State on blister rust control work.

(5) To have all salary and expense vouchers of temporary employees to be paid out of Federal funds approved by the individual directly

in charge of supervising cooperative blister rust control work in the State before being submitted to the United States Bureau of Plant Industry for payment. This individual shall be under appointment as collaborator without compensation in the United States Department of Agriculture. All Federal funds expended in connection with this cooperative work shall be disbursed in accordance with the fiscal regulations of the United States Department of Agriculture.

C. The South Carolina Crop Pest Commission:

(1) To conduct such survey and control activities as may be agreed upon each year by the cooperating parties.

(2) To undertake such destruction of white pines or Ribes in South Carolina and such enforcement of State laws as may be necessary for the effective prosecution of blister rust control work.

(3) To deputize and authorize the aforesaid employees of the United States Bureau of Plant Industry to destroy such pines, currants and gooseberries as may be necessary and as provided for by State laws.

D. It is Mutually Agreed:

(1) That the details of this cooperative work shall be planned and executed jointly by the Bureau of Plant Industry through its Division of Blister Rust Control, the South Carolina Commission of Forestry and the South Carolina Crop Pest Commission.

(2) That this memorandum of understanding shall take effect July 1, 1933, and continue in effect until June 30, 1935, provided, that either party may terminate the agreement at any time by a written statement to that effect 30 days in advance of the date of termination desired.

(3) That all persons appointed by the United States Bureau of Plant Industry and its cooperators under this memorandum shall be satisfactory to the cooperating parties.

(4) That the results of the cooperative work may be published jointly, or upon mutual agreement, by either cooperating party, with due credit given to the cooperating agencies. All manuscripts therefor, shall be criticized by the cooperating parties before publication and all form letters, bulletins and any other circulars to be mailed in penalty envelopes shall be submitted in manuscript form for approval by the United States Department of Agriculture before being printed or sent out, in accordance with Postal Law.

(5) That any expenditures involved in the work herein assumed by the United States Bureau of Plant Industry are contingent upon appropriations made by Congress for continuance of these activities, but no federal funds shall be expended in compensation for host

plants destroyed in control work.

(6) That for the fiscal term July 1, 1933, to June 30, 1935, the South Carolina Commission of Forestry and its cooperators will expend about $125.oo and the Federal Government in behalf of the United States Bureau of Plant Industry about $5,000.oo in connection with the work herein provided for, provided, however, that the maximum expended by the Federal Government shall not exceed $6,000.oo.

In witness whereof the parties hereto have severally signed these presents on the respective days and dates hereinafter set forth.

March 28 '34. H. A. SMITH
State Forester, South Carolina Commission of Forestry.

Mar. 29, '34. GEO. M. ARMSTRONG
State Pathologist, South Carolina State Crop Pest Commission.

Apr. 16, '34. K. F. KELLERMAN
Acting Chief, Bureau of Plant Industry, U. S. Department of Agriculture.

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WHITE PINE

Native white pine in commercial quantities is confined to the mountainous section of the counties of Oconee, Pickens, Greenville and Spartanburg. In the report on Blister Rust Control in South Carolina, 1934, made by Mr. Roy G. Pierce, Associate Pathologist, U. S. Department of Agriculture it was estimated that there was about 4,075 acres of woodland in these counties having a 5% or more of white pine. For the period ending October 27, 1934 the survey in Oconee County showed 1,518 acres having 5% stand or over, and 700 acres of estimated scattered white pine giving the county a total of 2,218 acres. In Pickens County (survey incomplete at this time) the survey showed 2,469 acres of white pine having a 5% stand or over, and 1500 acres of estimated scattered white pine, giving the total of 3,969 acres. The grand total for the two counties, 5% and over and scattered, is 6,187 acres. Approximately 2000 acres are within the Nantahala Forest. It was estimated by the Forest Supervisor that there were 5,890, 000 feet.B.M. of saw timber in the South Carolina unit of this Forest, January 1, 1930.

The growth of white pine in South Carolina seems to be regulated by the water supply. Practically all of the pine areas mapped were located on a water shed. The elevation is not an important factor as long as water is present. Ornamental pine are growing at an elevation of 700 feet in the stand. Some of the pine stands are pure, but in most cases the pine is mixed with hardwoods. One large pine seed tree generally seeding down the area. Several pine owners have planned to remove some of the hardwoods in order to get enough light for the growth of their pine.

A map of the respective counties was secured from the County Agent. No maps were available from the State Forester's office. The distribution of the white pine was placed on those maps in the field, and at the completion of the survey the data was transferred to U. S. Geological Survey Maps. A set of completed maps will be sent to the Washington office, Blister Rust Control, to Mr. H. A. Smith, State Forester and to Dr. G. M. Armstrong, South Carolina Crop Pest Commission. No Nursery of any type in Oconee County. In Pickens County, the Liberty Nursery, Liberty S.C. Route 3, has 200 trees of Pinus strobus L. This nursery has distributed 800 trees, for ornamental purposes only, in the last 5 years. The South Carolina Crop Pest Commission reports that nurseries in Greenville and Spartanburg are handling white pine, for ornamental purposes only, on a small scale. White pine is also being handled by the State Forest Tree Nursery at Camden, S.C., 2,100 white pine being distributed in 1930 by the State Forester. These trees were distributed for experimental purposes only. Due to excessive heat during the growing season the State Nursery is not attempting to raise white pine in the future, except for experimental purposes.

The nurseries referred to in this report are not growing forest tree seedlings, but seedlings for ornamental purposes.

RIBES

No data were available on the presence of wild or cultivated Ribes in this state in 1935. At the beginning of the work in May, 1934, cultivated Ribes were found in Oconee County. Practically in every instance where Ribes were found, the distribution was at old home places; bushes having been there for 15 to 30 years. In some cases, the Ribes were wild bushes brought from Georgia and North Carolina and cultivated. The owners of the cultivated Ribes cooperated with the control program in permitting their bushes to be eradicated, but some bushes were left in the County. These bushes can be secured in the future. Some of the cultivated Ribes were eradicated by the owners. Ribes were also found and eradicated at old abandoned home places. The bushes were entirely neglected, and the small amount of fruit produced was not used. At occupied and unoccupied houses the bushes were entirely neglected and fruit not used. Bushes were often found to be escaping from cultivation; sometimes 100-200 feet away from the original bushes. The bushes escaping from cultivation and those found at abandoned places have been listed as escaped cultivated Ribes. The species found in this state so far have been Ribes rotundifolium (round leaf gooseberry), Ribes grossularia (gooseberry) and Ribes vulgare (cultivated red currant). In Oconee County, a total of 473 Ribes were eradicated. In Pickens County, the same conditions exist. A total of 1730 bushes were eradicated, giving a grand total of 2203 bushes eradicated in the two counties. No wild species, except those escaping from cultivation and at unoccupied house places, have been found. The distribution of the Ribes eradicated, and Ribes left are shown on the U. S. Geological Survey Maps with the pine distribution. There is no data available concerning nurseries growing Ribes in this state. Some of the Ribes eradicated were bought from northern nurseries.

WHITE PINE BLISTER RUST
WHAT IT IS

Blister rust (Cronartium Ribicola) is a plant disease which is caused by the growth of a parasitic fungus within the inner bark of the white pine tree and in the leaf tissues of Ribes (gooseberry and currant bushes). It spreads from pine to Ribes and back to pine by means of wind blown spores. The disease cannot directly spread from one tree to another, but must pass through a stage on the leaves of Ribes in order to complete its life cycle. Control consists of removing this alternate host (Ribes) in and around pine stands.

BRIEF HISTORY

The disease probably originated in Asia, and then spreaded over Europe in 1857. The introduction of the rust in the United States resulted largely from the importation of white pine seedling stock from the nurseries of France and Germany early in

the twentieth century. Strict quarantine regulations have since prohibited the shipment of white pine and Ribes into the United States. It was first discovered in North America at Geneva, New York, in 1906 on Ribes, and 1909 on white pine. The disease is now present in every important white pine growing region in America.

STATUS IN THE STATE

No blister rust of white pine has been found in South Carolina.

CONTROL WORK DONE IN SOUTH CAROLINA BEFORE 1934

Mr. N. F. Warriner, former blister rust man, was designated by the Supervisor of the Nantahala National Forest to take charge of the work on the Forest in South Carolina. A total of 420 acres of federal and 468 acres of private land adjoining the Forest were scouted, making a total of 888 acres covered in the state. No Ribes either wild or cultivated were found.

BLISTER RUST CONTROL IN 1934

I. Spread of the Rust

On Pine. No blister rust of white pine has been found in South Carolina.

On Ribes. No infection on Ribes has been found in South Carolina. Bushes eradicated and the ones left were carefully examined for infection.

II. Pine Location and Pre-eradication Survey

The pine locations were made by the State Leader, J. A. Dean, assisted by laborers from the National Re-employment Bureau in the respective counties as they were worked. The eradication work was conducted in conjunction with the pine location. The only pre-eradication work completed at the present time is the rechecking of the 888 acres surveyed by Mr. Warriner in 1933. This work was not done in the fall season but during the eradication period. The results of this survey for the period April 27 to October 27, 1934 inclusive are shown in the following tables according to the agencies taking the survey.

Table #1. Showing results of Pre-eradication Survey of Pine Areas on National Forests and National Parks from E.C.W. Camps. April 27 to October 7, 1934

Name of National Forest or Park	Acres pine to protect	Acres to be worked	Estimated man days labor	Percent survey complete
0	0	0	0	0

Table #2- Showing results of Pre-eradication Survey of Pine Areas on State and Private lands from E.C.W. Camps, April 27 to October 27, 1934.

Name of County	Acres pine to protect	Acres to be worked	Estimated man days labor	Percents survey completed
0	0	0	0	0

Table #3-Showing results of Pre-eradication survey of Pine Areas done by NIRA men outside of State and Federal Camps. April 27 to October 27, 1934.

County	Acres pine to protect	Acres to be worked	Estimated man days labor
Oconee	888	1000	10.0

Table #4- Showing results of Pre-eradication work done by all agencies, April 27 to October 27, 1934

Agency	Acres pine to protect	Acres to be worked	Estimated man days labor
E.C.W.	0	0	0
N.I.R.A.	888	1000	10.0
Total	888	1000	10.0

111. Local Control (Ribes Eradication)

This phase of work consists of eradication all Ribes within 900 feet of pine areas. Program inSouth Carolina also included eradication of all Ribes at abandoned house places in white pine areas.

Table #5- Work done in National Forests and National Parks and on Private and State Lands by E.C.W. Camps, April 27 to October 27, 1934.

Name of National Forest and Park or Count, if non-federal land	Acres pine protected	Acres worked	No. Ribes pulled	Man days labor
0	0	0	0	0

Table # 6- Showing Control by N.R.A. labor, April 27 to October 27, 1934

County	Acres pine protected	Acres worked	No. Hibes pulled	Man days labor
Oconee	2818	6810	[illegible]	[illegible]
Pickens	[illegible]	[illegible]	1730	154
Total	6187	14183	[illegible]	[illegible]

Table # 7- Showing local control work done by all agencies April 27 to October 27, 1934

Agency	Acres pine protected	Acres worked	No. Hibes pulled	Man days labor
N.R.A.	6187	14183	[illegible]	[illegible]
E.C.W.	0	0	0	0
total	6187	14183	[illegible]	[illegible]

Table #8- Showing ownership of land upon which local control work was done, April 27 to October 27, 1934

Ownership	Source of labor	Acres of pine prot.	Acres worked	No. Hibes pulled	Man days labor
National Forest	N.R.A.	1800	[illegible]	68	50
National Park	0	0	0	0	0
State Forest	0	0	0	0	0
Municipal	0	0	0	0	0
Private	N.R.A	4387	11153	[illegible]	177
Total		6187	14183	[illegible]	[illegible]

IV. Nursery Sanitation

No work of this character has been carried on. Private nurseries are known to be handling white pine. (Table included in report for future use, if needed)

Table #9

Nursery	Owner	Agency doing work	Acres pine protected	Acres worked	No. Hibes pulled	Man days labor	First second or third era.
0	0	0	0	0	0	0	0

V. European Black Currant Eradication

There is no data available concerning a single planting of this species (Ribes nigrum) in South Carolina (Table included in report for future use, if needed)

Table #10- Showing results of Black currant Eradication during 1934.

County	Source of labor	no. location destroyed	No. bushes destroyed	No. infected locations	Square miles covered
0	0	0	0	0	0

VI. Checking of Eradication Work.

No work of this nature has been carried on at the present time. Plans have been made to conduct this checking at a future date.

VII. Experimental work.

No experimental work in South Carolina.

VIII. Informational Activities.

The principal medium for disseminating Blister Rust information this year was by direct contact. Personal interviews were made at practically every home in the white pine areas. Blister Rust Bulletins were left with every interested person. Posters were placed in conspicious places on protected areas.

A Blister Rust exhibit in connection with the State Forestry Commission and State Pathologist was placed at Clemson College, S.C. during Farmer's Week, August, 13-17, inclusive.

Bulletins were distributed and many contacts were made with interested persons by the State Leader.

Talks on Blister Rust Control was given by the State Leader ti Agricultural Classes, Rotary Clubs, and etc. Newspaper articles were also printed in the local and State papers. One outdoor meeting was held with a County Farm Agent.

IX. Miscellaneous Work.

State Leader treated several ornamental pine for pine bark louse, Adelges pinicorticis Fitch.

X. Plans for 1935.

Rechecking of areas where Ribes have been eradicated and completing the survey in Greenville and Spartanburg Counties.

XI. Legislation.

No new laws pertaining to Blister Rust drawn up for the state.

XII. Photographs

Photograph no. 1- Shows the type of Ribes found in South Carolina. Bushes are Ribes grossularia, and have been in this field for over 30 years. Bushes are entirely neglected.

Photograph no. 2-Shows the growth which covers Ribes. Growth is mostly briars. Ribes are the grossularia type, and are entirely neglected.

Photograph no. 3- Shows the bushes which were located in photograph no 2.

Photograph no. 4- Shows the type of bushes eradicated at old house places. Bushes entirely neglected.

1

2

3

4

ACKNOWLEDGMENT

The State Leader wishes to thank the Blister Rust personnel for the conscientious service rendered by it, making possible a sucessful season in South Carolina. He likewise extends his thanks to the two State cooperators, lumber men, County Agents, owners of pine lands, and others for the spirit of cooperation they have given to the Blister Rust Division.

J. H. Dean
State Leader

Sheet 3.

SUMMARY OF EDUCATIONAL AND PROMOTION ACTIVITIES IN INTEREST OF COTTON CONTEST

1951.

State	Meetings addressed	Attendance	Items published	Initial Interviews	Publications distributed	Follow up calls	Individuals interviewed	Letters placed	Demonstrations placed	Educational leaflets	Mimeographed articles distributed
S.C.	4	146	7	833	655	136	162	15	~~2~~	2 *	0

* Same as Demonstrations placed; were educational. Placed at Farmer's Week and Clemson Agricultural Student Fair. only counted once

Table 4.

Number of Demonstrations and Farmers Contacted in Farmers Institutes, Clemson College:

1934.

Item	Demonstrations conducted	Attendance at demonstrations	Farmers labor-saving demonstrations	Farmers labor-saving demonstrations participated in	Farmers living demonstrations	Farmers living demonstrations participated in	Farmers using improved seed	Farmers using improved seed participated in	Farmers using improved stock	Farmers using improved stock participated in	Farmers using improved farming methods	Farmers using improved farming methods participated in
S.C.	4	146	7	833	655	136	162	15	2	2	*	0

* Same as Demonstrations placed; were educational. Placed at Farmer's Week and Clemson Agricultural Student Fair.

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TABLE 5 - LOCAL CONTROL - RESULTS OF RIBES ERADICATION
1934 - N.R.A.

Initial Eradication

County	No. of projects	Acres white pine protected	Acres worked by scouts	Ribes bushes pulled Escaped	Ribes bushes pulled Cult.	Total bushes	Man days labor	Man days supervision Field	Man days supervision Office
Oconee	46	1330	5810	150	293	443)	265-3/4		
Pickens	72	14699	23018	588	1172	1740)			
Total initial work	118	16029	28828	718	1465	2183	265-3/4		
Total reworking Oconee Co.	1	888	1000	0	30	30	12¼		
Total all work		16917	29828	718	1495	2213	278*		

*Equivalent of 2223 hours of labor.

C O S T D A T A

	Labor	Supplies equipment	Supervision Leader	Supervision Stenog.	Initial labor, supervision supplies and Stenog.
Initial eradication in Oconee & Pickens Cos.	$959.85)		$2080.88	$102.58	$3242.65
	)	$58.85			
Reworking in Oconee Co.	40.50)				
Total all work	$1000.35	$58.84	$2080.88	$102.58	$3242.65

Costs per acres

Based upon labor only	Based upon labor, equipment and state leader	Based upon all costs

Period: April 27-Dec.31,1934

* 5,200 acres of scattered pine
11,717 acres of pine above

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Division of Plant Disease ~~Eradication~~ Control

C.R.C.-5B

STATISTICAL REPORT OF RIBES ERADICATION WORK UNDER N.R.A.

Period: April 27-December 31, 1934.

State: South Carolina

Year: 1934

									Totals for State
Name of District Agent			J.H.Dean						
No. ~~towns~~ worked counties			2						2
Period work performed			4/27-12/31						4/27-12/31/34
No. men employed			11						11
Results of Ribes Erad. Initial Erad.	Total acreage worked		18828						18828
	*Acreage pine protected		16029						16029
	Ribes Pulled	~~Hrd~~ esc.cu.	718						718
		Cult.	1457						1457
	Total man hours	Labor	2133						2133
	Total cost of Ribes erad.	Gov't.	959.85						959.95
		State	305.00						305.00
Results of Ribes Erad. Re-erad.	Total acreage worked		1000						1000
	*Acreage pine protected		888						888
	Ribes Pulled	~~Hrd~~ esc.cu	0						0
		Cult.	38						38
	Total man hours	Labor	90						90
	Total cost of Ribes erad.	Gov't	40.50						40.50
		State	0.0						0.0
Results of Ribes Erad. Initial and Re-erad.	Total acreage worked		19828						19828
	*Acreage pine protected		16917						16917
	Ribes Pulled	~~Hrd~~-esc.cu.	718						718
		Cult.	1495						1495
	Total man hours	Labor	2223						2223
	Total cost of Ribes erad.	Gov't	1000.35						1000.35
		State	305.00						305.00
~~Supervisors~~ Agent ~~Checkers~~--	Total man hours		1982.0						1982.0
	Total cost	Gov't**	2183.46						2183.46
		State	305.00						305.00

*List the total time of laborers, sub-foremen, foremen, and scouts. Under "Total Cost of Ribes Erad." include all expenditures for wages and expenses.

*5,200 acres of scattered pine
11,717 acres of pine above 5%

* Includes pine both above 5% and scattered pine below 5%;all protected.

** Includes agent and stenographer

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Period: April 27-December 31,1934

B[illegible]C.-6A

SUMMARY OF EXPENDITURES FOR BLISTER RUST CONTROL

State South Carolina Period: April 27-December 31, 1934. Calendar Year 1934

Table I.- Expenditures for General Supervision and District BRC Agent Activities

	E.P.Q. Salaries				E.P.Q. Expenses				Total
	~~P.P.I.~~	N.R.A.	State	Total	~~P.P.I.~~	N.R.A.	State	Total	Sal. & Exp.
General supervision	1231.33	00.00	180.00	1411.32	1010.97	00.00	125.00	1135.97	2547.29
BRC Agent Act.									
Total	1231.33	00.00	180.00	1411.32	1010.97	00.00	125.00	1135.97	2547.29

Table II.- Expenditures by Programs for Control Projects Other Than General Supervision and BRC Agent Activities

		Projects		Ribes Eradication: Regular Control Work	Ribes Eradication: Special Control Work: Nursery Sanitation	Ribes Eradication: Special Control Work: Blk.Currant Eradication	Ribes Eradication: Supervision of Ribes Eradication	Ribes Compen-sation	Treatment Diseased Pines	Field Data	Totals
UNIT A	REG. COOP. PROGRAM	Wages	State								
			P.P.I.								
			Total								
		Expen-ses	State								
			P.P.I.								
			Total								
		Total									
UNIT B	ECW PROGRAM	Wages	State								
			E.C.W.								
			Total								
		Expen-ses	State								
			E.C.W.								
			Total								
		Total									
UNIT C	NRA PROGRAM	Wages Labor	State	00.00							
			N.R.A.	1000.35							
			Total	1000.35							
		Expen-ses	State								
			N.R.A.								
			Total								
		Total									
UNIT D	FERA PROGRAM	Wages	State								
			F.E.R.A.								
			Total								
		Expen-ses	State								
			F.E.R.A.								
			Total								
		Total									

Grand Total-Salaries,Expenses,and Labor-$ 3547.64

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T E N N E S S E E

ANNUAL REPORT

of

WHITE PINE BLISTER RUST CONTROL

in

Tennessee - 1934

By W. E. Duggan

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF PLANT INDUSTRY,
THE TENNESSEE DIVISION OF FORESTRY, AND THE TENNESSEE STATE
ENTOMOLOGIST AND PLANT PATHOLOGIST

Cooperative Work in Controlling White Pine Blister Rust in Tennessee.

The object of the cooperative work outlined herein is to provide for scouting and inspection for the white pine blister rust in Tennessee and for the application of such methods of eradication or control as may be necessary.

A. The United States Department of Agriculture, Bureau of Plant Industry Agrees:

(1) To pay the salaries and necessary travel expenses of one or more men for such time as may be necessary to determine the occurrence and limits of the spread of this disease in Tennessee, and under the authority of the Tennessee Division of Forestry and its cooperators shall cooperate in the eradication of the disease wherever found.

(2) To assume responsibility for technical instruction of employees engaged in these investigations.

(3) To conduct such experiments and demonstrations as may be desirable for the purpose of securing effective control of the white pine blister rust in Tennessee.

B. The Tennessee Division of Forestry Agrees:

(1) To assume the administrative direction of the aforesaid employees of the United States Bureau of Plant Industry.

(2) To conduct such control activities as may be agreed upon each year by the cooperating parties.

(3) To prepare an annual report of all blister rust control work performed under the provisions of this memorandum, one copy of which will be delivered to each of the cooperating parties.

(4) To submit in prescribed form to the United States Bureau of Plant Industry a monthly report of salaries and expenses paid by the State on blister rust control work.

(5) To have all salary and expense vouchers of temporary employees to be paid out of Federal funds approved by the individual directly in charge of supervising cooperative blister rust control work in

the State before being submitted to the United States Bureau of Plant Industry for payment. This individual shall be under appointment as collaborator without compensation in the United States Department of Agriculture. All Federal funds expended in connection with this cooperative work shall be disbursed in accordance with the fiscal regulations of the United States Department of Agriculture.

C. The Tennessee State Entomologist and Plant Pathologist Agrees:

(1) To conduct such survey and control activities as may be agreed upon each year by the cooperating parties.

(2) To undertake such destruction of white pines or Ribes in Tennessee and such enforcement of State laws as may be necessary for the effective prosecution of blister rust control work.

(3) To deputize and authorize the aforesaid employees of the United States Bureau of Plant Industry to destroy such pines, currants and gooseberries as may be necessary and as provided for by State laws.

D. It is Mutually Agreed:

(1) That the details of this cooperative work shall be planned and executed jointly by the Bureau of Plant Industry through its Division of Blister Rust Control, the Tennessee Division of Forestry and the Tennessee State Entomologist and Pathologist.

(2) That this memorandum of understanding shall take effect July 1, 1933, and continue in effect until June 30, 1935, provided, that either party may terminate the agreement at any time by a written statement to that effect 30 days in advance of the date of termination desired.

(3) That all persons appointed by the United States Bureau of Plant Industry and its cooperators under this memorandum shall be satisfactory to the cooperating parties.

(4) That the results of the cooperative work may be published jointly, or upon mutual agreement, by either cooperating party, with due credit given to the cooperating agencies. All manuscripts therefor, shall be criticised by the cooperating parties before publication and, all form letters, bulletins and any other circulars to be mailed in penalty envelopes shall be submitted in manuscript form for approval by the United States Department of Agriculture before being printed or sent out, in accordance with Postal Law.

(5) That any expenditures involved in the work herein assumed by the United States Bureau of Plant Industry are contingent upon appropriations made by Congress for continuance of these activities, but no Federal funds shall be expended in compensation for host plants destroyed in control work.

(6) That for the fiscal term July 1, 1933, to June 30, 1935, the Tennessee Division of Forestry and its cooperators will expend about $1,000.oo and the Federal Government in behalf of the United States Bureau of Plant Industry about $14,000.oo in connection with the work herein provided for, provided, however, that the maximum expended by the Federal Government shall not exceed $15,000.oo.

In witness whereof the parties hereto have severally signed these presents on the respective days and dates hereinafter set forth.

April 3, 1934. JAMES O. HAZARD
State Forester, Tennessee Division of Forestry.
State Department of Agriculture

April 2, 1934. G. M. BENTLEY
Tennessee State Entomologist and Pathologist.
State Department of Agriculture.

Apr. 16 '34. K. F. KELLERMAN
Acting Chief, Bureau of Plant Industry, U. S.
Department of Agriculture.

Approved

O. E. VAN CLEAVE
O. E. Van Cleave
Commissioner of Agriculture.

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TENNESSEE WHITE PINE BLISTER RUST CONTROL REPORT

Period May 7 - Sept. 30, 1934

Initial White Pine Blister Rust Control work on private land began in Tennessee May 7, 1934 in cooperation with James O. Hazard, State Forester and Prof. G. M. Bentley, State Entomologist and Plant Pathologist. This cooperation was further extended in that District Foresters of East Tennessee, North Cumberlands, and South Cumberlands assisted the agent working in their district as to recommendations of scouts and the use of any data in their files.

Personnel consisted of the following men and their respective designations:

Title	Official Headquarters	Period Employed
State Leader W. E. Duggan	Room 307, Federal Bldg. Knoxville, Tenn.	5/7 --
Field Agent A. H. Moss	Pikeville, Tenn.	5/7 -- 10/31
Field Agent Pete Stegall	Harriman, Tenn.	5/7 -- 10/31
Field Agent Troy Jones	Knoxville, Tenn.	5/7 -- 10/31
Field Agent J. W. Lehman	Elizabethton, Tenn.	7/1 -- 10/9

Men of the following list were employed as Temporary Scouts under Letter of Authorization to assist in locating, mapping and scouting of white pine areas and to aid in any eradication work:

Temporary Scouts	No. Hrs. Employed	Period Employed 1934
R. F. Green Brayton, Tenn.	240	5/16 -- 7/15
Luther Evensville, Tenn. Route 2.	48	7/1 -- 7/31
J. W. Pugh, Grandview, Tenn.	100	7/15 -- 8/15

(Continued from first page)

Temporary Scouts	No. Hrs. Employed	Period Employed 1934
Sherman Cox, Daysville, Tenn.	230	8/16 -- 9/29
Guy Jones, Olliver Springs, Tenn. Route 2	621½	5/16 -- 9/30 (Appt. Agent to complete county)
Dester Tompson, Gernt, Tenn.	132	9/1 -- 9/30
Andrew Hamby, Crab Orchard, Tenn.	8	9/16 -- 9/30
Clyde Hamby, Hebbertsburg, Tenn.	8	9/16 -- 9/30
Clarence Young, Daysville, Tenn.	8	9/16 -- 9/30
J. D. Stephens, Allardt, Tenn.	80	9/16 -- 9/30
John W. Jones, Olliver Springs, Tenn. Route 2.	32	9/16 -- 9/30
A. C. Long, Walland, Tenn.	166	5/16 -- 6/15 Later 7/16 -- 7/31
B. P. Ford, Hartford, Tenn.	209½	6/16 -- 7/31
Arthur Williams, Route 2, Cosby, Tenn.	16	8/1 -- 8/15
John Murphy, Star Route, Tellico Plains, Tenn.	200	8/1 -- 9/15
C. F. Casteel, Tennga Hotel, Copperhill, Tenn.	32	9/16 -- 9/30
L. H. Roberson, McFarland, Tenn.	8	9/16 -- 9/30

(Continued from page 2)

Temporary Scouts	No. Hrs. Employed	Period Employed
Hayden Hall, Archville, Tenn.	16	9/16 -- 9/30
Victor Morel, Reliance, Tenn.	16	9/16 -- 9/30
Rufus Hall, Conasauga, Tenn.	8	9/16 -- 9/30
M. M. Arnold, Mountain City, Tenn.	216	7/1 -- 8/31
J. K. Nelson, Mountain City, Tenn.	124	9/1 -- 9/30
Will Stout, Shouns, Tenn.	104	9/1 -- 9/30
Richard Wilson, Route 1, Mountain City, Tenn.	104	9/1 -- 9/30
W. T. Muse, Route 2, Mountain City, Tenn.	40	9/16 -- 9/30

A Labor Crew used in Bledsoe County eradication of Granite gooseberry (Ribes curvatum) consisted of the following men:

John Roberson, Crew foreman	)	
Melvin Turner, Laborer	)	
Herman Turner, "	)	Pikeville, Tennessee.
Frank Crawford, "	)	
G. C. Teeters, "	)	7/6 -- 7/12
Andy Wedel, "	)	7/13 - 7/18
Bob Sapp, "	)	

One of the main objectives of this activity was to ascertain white pine acreage in the 18 commercial pine counties of stands 5% and over scattered. Scouting and mapping during the period May 7 -- Sept. 30, 1934 resulted in a total of 20,633 actual pine acres. This area plus a protective zone of 900 feet scouted makes a total of 80,575 acres. The majority of scattered acreage has future potential value for seeding or woodlot purposes.

Below is a table summarizing by counties white pine acreage covered through September 30, 1934. The remaining acreage will be given in a

supplementary report for the period October 1 -- December 31, 1934:

County	White Pine Acreage	Acreage plus 900 ft. protective zone
Bledsoe	546	1985
Blount	144	1377
Cocke	517	4214
Cumberland	2095	10569
Fentress *	1670	3769
Hamilton	227	930
Johnson	4267	18344
Monroe	973	5546
Morgan	6123	21704
Pickett *	125	340
Polk	77	502
Rhea	967	3096
Scott *	2902	8199
Sevier	125 acres (Scattered)	
TOTAL	20,633	80,575

* SCOUTING NOT COMPLETED.

The accompanying map shows the natural white pine range as based on Cope's Survey of 1930. Counties completed during the current field season conform with this map.

No figures have been obtained to date on lumber production during the last five years. These figures are probably tabulated in bulletins of the Bureau of Census. Since these were not available at any immediate location inquiry and correspondence will necessarily require that white pine lumber production figures be submitted in the supplementary report. Bulletins of the Bureau of the Census list white pine lumber production from 1925 -- 1930 as follows:

1925	.....	9,749,000 Ft. B. M.
1926	.....	5,600,000 " "
1927	.....	4,302,000 " "
1928	.....	4,746,000 " "
1929	.....	7,138,000 " "
1930	.....	5,112,000 " "
1931	.....	3,732,000 " "
1932	.....	1,092,000 " "

There are 64 commercial nurseries in Tennessee growing white pine either for ornamentals or forest planting. However, most of this growing stock is on a very small scale and is confined to supplying ornamental trees rather than planting projects. Data on Tennessee State Forest Nurseries is as follows:

Nursery at Jackson, Tennessee -- 1933: 8,160 seedlings distributed in the state.
1934:18,250 seedlings were furnished E.C.W. for planting on the State Forest in Bledsoe County.

Bledsoe State Forest Nursery -- 1934: Approximately 60,000 white pine seedlings available for future planting.
Pikeville, Tennessee.

The Tennessee Valley Authority Nursery at Clinton, Tennessee, is planning an annual planting of approximately 50,000 seedlings per year after a two year period.

Below is a list of commercial nurseries in Tennessee which have white pine stock:

Nursery	Location	No. & kind of trees
	Blount County	
John W. Oliver	Cades Cove, Tenn.	Not available
	Carter County	
Natures Evergreen Co., Proprietor - J.D.Arnold	Carter, Tenn.	" "
Natures Nurseries, Proprietor - C. I. Rains	" "	" "
J. B. Anderson	Hampton, Tenn.	" "
Botanical Nursery Co., Proprietor - E. W. Mason	" "	" "
	Cumberland County	
N. W. Adwell	Ozone, Tenn.	" "
Jesse Hassler	Crab Orchard, Tenn.	" "
A. C. Pelfrey	" " "	" "
Cumberland Mountain School, T. O. Barnett	Crossville, Tenn.	" "
Dan Lawson	Route 2, Crossville, Tenn.	" "
	Davidson County	
Mrs. J. C. Bradford	8th & Bradford Aves., Nashville, Tenn.	4 -- Ornamental

(Continued from page 5)

Nursery	Location	No. & kind of trees
	Davidson County	
Holders Nursery Co.	Nashville, Tenn.	10 -- Ornamental
	Franklin County	
John Anderegg	Huntland, Tenn.	250 -- "
Southern Nursery & Landscape Company, E. W. Chattin	Winchester, Tenn.	32 -- "
	Grundy County	
Holly Branch Nursery, W. B. King	Gruetti, Tenn.	100 -- "
Mountain Creek Nursery, A. C. Hobbs	Camp 4, Palmer, Tenn.	100 -- "
	Henry County	
Paris Landscape & Nursery Company, P. H. Jones and J. H. Myrick	Paris, Tennessee.	1500 -- "
	Johnson County	
James Brewer	Route 2, Butler, Tenn.	Not available
B. T. Cable	Route 1, Butler, Tenn.	" "
Elk River Evergreen Co., D. C. Finney	Route 4, Butler, Tenn.	" "
Mrs. Ida C. Finney	Route 4, Butler, Tenn.	" "
R. L. Jones	Butler, Tenn.	" "
Luther A. Johnson	" "	" "
Dewey Ward	Box 153, Butler, Tenn.	" "
Appalachian Evergreen Co. Homer Stalcup	Doeville, Tenn.	" "
O. D. Arnold	" "	" "
W. B. Arnold	" "	" "

(Continued from page 6)

Nursery	Location	No. & Kind of trees
	Johnson County	
R. C. Crowe	Doeville, Tenn. (MAIL: 62 Cranberry St., Johnson City, Tenn.)	Not available
Cut Rate Evergreen Co. William R. McGuire	Doeville, Tenn.	" "
Doeville Collection Co. W. G. Norris	" "	" "
Forest Evergreen Nurseries J. E. Norris	Box 29, Doeville, Tenn.	" "
Abe Norris & Co.	Box 29, Doeville, Tenn.	" "
J. F. Norris	Doeville, Tenn.	" "
Pandora Evergreen Co. Sam Brookshire	" "	" "
J. O. Rambo	" "	" "
Unaka Evergreen Supply Co., Kyle L. Pleasant	" "	" "
Valley View Evergreen Supply Co., W. L. Stalcup	" "	" "
Anthony Lake Nursery, S. K. Mortimer	Mountain City, Tenn. (MAIL: Pineola, N. C.)	" "
Goodwill Nursery Co. J. T. Ray	Mountain City, Tenn.	" "
R. A. May	" " "	" "
Mountain City Evergreen Market, W. A. McGuire	" " "	" "
George W. Stout	Route 3, Box 54, Mountain City, Tenn.	" "

Nursery	Location	No. & Kind of Trees
	Johnson County	
	(Continued from page 7)	
Mrs. Dora Dougherty	Neva, Tenn.	Not available
W. F. Potter	Shouns, Tennessee	Ditto
Wildwood Nurseries (Grover C. Robbins)	" " (P.O. Blowing Rock, N. C.)	Do.
	Knox County	
Howell Nursery Company	Knoxville, Tenn.	25 - Ornamental
	Madison County	
Davis Nurseries C. W. Davis & Sons	Jackson, Tennessee Box 505.	4 - Ornamental
	Montgomery County	
Greenwood Cemetery Co. S. C. Beatty	Clarksville, Tenn.	25 - Ornamental
	Obion County	
Morning Star Nursery Co. E. S. Couttra	Rives, Tennessee	Not available
	Rutherford County	
Murfreesboro Nursery Chas. R. Givan	Murfreesboro, Tenn.	25 - Ornamental
	Sevier County	
Wiley Oakley	Gatlinburg, Tennessee	50 - "
	Shelby County	
W. R. Dixon	Route 5, Buntyn, Tennessee	100 - "
Cartwright Nurseries A. D. Cartwright	Collierville, Tenn.	1000 - "
Fisher Flowers Hubert F. Fisher	640 Anderson Place, Memphis, Tenn.	40 - "
L. P. Smith, Nursery L. P. Smith	970 S. Highland Ave., Memphis, Tenn.	90 - "

Nursery	Location	No. & Kind of Trees
	Shelby County (Continued from page 8)	
Taylor Nurseries W. F. Taylor	R-2, Station E., Memphis, Tennessee.	50 - Ornamental
	Sullivan County	
E. F. Dick	Kingsport, Tennessee	Not available
Kingsport Nurseries Mrs. Lola Dennis	" "	6 - Ornamental
	Unicoi County	
Gardens of the Blue Ridge, E. C. Robbins	Erwin, Tenn. (MAIL: Ashford, N. C.)	Not available
Pleasant Garden Nursery Company, Chas. R. Peak	Erwin, Tennessee	" "
Unaka Nurseries, M. F. Parsley	" "	" "
	Warren County	
Noleridge Nurseries H. F. Perry	McMinnville, Tenn. /Route 7/	1000 - Ornamental
	Washington County	
Gateway Evergreen Co., Thomas Arp	Johnson City, Tenn.	Not available
Johnson City Evergreen Company, John McGuire	" " "	" "

TOTAL 4,407 from only available figures.

Since state files did not list all of the growing stock available for distribution, the exact total for the state will be secured by means of correspondence. However, the main use of the above nursery stock is for ornamentals and not forest plantings.

At the present date only the Bledsoe State Forest Nursery has been scouted for a distance of 1,500 feet. No black currants have been found

in previous scouting. Since the protective zone for this species is one mile, additional nursery scouting will necessarily conform to this distance. The present plan is to concentrate nursery scouting in the eastern part of the state since this region is the natural white pine region.

The following figures and data relate to the stand in saw timber and cordwood with value.

For the eleven counties completed during the current field season the stand of Old Growth Saw -- Timber totals 8,241 M. board feet. The counties to work yet have 39,674 M. board feet. This total of 47,915 M. board feet is 1931 figures compiled by Carl I. Peterson, Assistant Forester, Tennessee Forest Service, Nashville, Tennessee, and, have since changed according to yearly cut. Mr. Peterson lists the present stand of Commercial White Pine Saw-Timber for the counties worked as 54,330 M. board feet and 47,532 M. board feet for the remaining counties to cover making a total of 101,862 M. board feet.* Since in 1933, white pine lumber production was fourth in volume for the United States, it is very likely that the Tennessee prices for that year resulted in a huge deduction of the above 1931 figures.

The following figures and paragraph were taken from the Annual Report for the Southern Appalachian District by Mr. Roy G. Pierce, April 7, 1933.

"The Forest Service in January, 1932, estimated that there were 114,000,000 feet of white pine sawtimber in the state. This is worth at $6.86 per M (the average annual stumpage price for period 1923 - 30 according to R. E. Marsh of U. S. F. S.) $782,040.00. In addition the Forest Service estimated that there were 66,000 cords of white pine on cordwood areas which at $1.75 per cord would be worth $658,000.00. The cordwood converted into feet board measure would be equivalent to 33,000,000 feet. The combined value of merchantable white pine timber and cordwood areas is $897,540.00 and the stumpage is 147,000,000 feet."

Two wild species of Ribes were found growing around and within white pine stands during the current field seasons. Ribes curvatum (Granite Gooseberry) was found in abundance in Bledsoe, Rhea and Hamilton Counties. Ribes cynosbati (Prickly gooseberry) was found in Bledsoe, Rhea, Cumberland, Morgan, and Johnson Counties.

Cultivated bushes Ribes grossularia and Ribes vulgare were found in every county worked. These plants were either used for edible purposes or as an ornamental for homesites.

Ribes curvatum as the accompanying ecology sheets show, had no definite habitat. Eradication revealed that bushes were growing under laurel, scattered on dry slopes, on rock walls, along fence rows and grouped in patches. Ribes cynosbati was usually found in talis slopes except for Yellow Creek -- Cumberland County where they were scattered along a slope at a

* Also 1931 estimates.

definite elevation. Stems of Ribes cynosbati in Morgan County were over an inch in diameter and over 13 feet in length in many cases. A Ribes curvatum bush in Bledsoe County measured 13 feet and six inches in length. Occurrence of cynosbati on Northern slopes was usually scattered.

Below is a tabulated summary of wild species pulled during the past season:

Period May 7 -- Sept. 30, 1934*

County	Species	No. Bushes Pulled
Bledsoe	Ribes curvatum (Granite gooseberry)	29,792
Rhea	R. curvatum R. cynosbati (Prickly gooseberry)	17,042
Hamilton	R. curvatum -- Thousands unpulled because of no white pine acreage.	
Cumberland	R. cynosbati	1,766
Johnson	R. cynosbati	6,507 (Not completed)

* Crew eradication in Morgan County was after this period. Also crew eradication in Johnson County after this date.

Cultivated bushes as stated in a previous paragraph were within the White Pine range of all counties. Reports and topography indicate that remaining pine growing counties have wild species.

The accompanying map shows distribution of the wild species.

Nurseries growing Ribes are listed as follows:

Nursery	Location	Currants & Gooseberries
	Anderson County	
T. V. A. Nursery Richard Kilbourne	½ mile below Norris Dam	250 Gooseberries
	Davidson County	
F. E. Barnes	Route 1, Joelton, Tenn.	2,000 currants and gooseberries (½ ACRE)

	Dekalb County	
Blue Springs Nursery Co. J. L. & M. B. Smith	Smithville, Tenn. /Route 5/	Approximately 250 currants and gooseberries (1/8 acre)
Roy Cantrell	Route 8, Smithville, Tenn.	50000 currants and gooseberries
Center Grove Nursery Co. Burnie Cantrell	Smithville, Tenn.	10,000 Currants and Gooseberries
Dekalb Nurseries J. H. Staley and G. B. Parsley	Route 8, Smithville, Tenn.	50,000 currants & gooseberries
Haley Nursery Co. George Haley	Smithville, Tenn. Route 5.	Approximately 2000 currants and gooseberries (1 acre)
Ideal Nursery & Orchard Co. W. R. Underwood	Smithville, Tenn. (Route 5)	1000 currants and gooseberries
Kelton Nursery Co. C. A. Cantrell	Smithville, Tenn. Route 3	No acreage given making estimation impracticable
Pine Creek Nursery Co., W. R. Tittsworth & Son	Smithville, Tennessee.	Impracticable to estimate
	Gibson County	
Planters Nurseries T. C. Ferrell	Humboldt, Tenn.	Impracticable to estimate
	Grundy County	
John Scruggs	Monteagle, Tenn.	50,000 Currants and Gooseberries
	Putnam County	
Baxter Nursery W. L. Johnson	Baxter, Tenn.	50 gooseberries
	Sumner County	
Portland Nursery Co. John S. Donoho	Sumner County, Tenn.	2,000 currants & gooseberries
	Warren County	

(Continued on page 13)

Warren County

(Continued from Page 12)

Nursery	Location	Currants & Gooseberries
Couch Bros. Nursery Co. W. M. & T. K. Couch	McMinnville, Tenn. R - 5	1,500 Currants and Gooseberries
	Wilson County	
Wilson County Nursery Co. W. A. Green	Martha, Tennessee.	100 Currants and Gooseberries.

TOTAL 169,150 Currants and Gooseberies. Not available separately from files.

The White Pine Blister Rust (Cronartium ribicola) is a parasitic fungus disease and lives on five-needled pines and currants and gooseberries (Ribes species). Protection by the eradication of Ribes has been active in the Northern and Lake States for several years since its introduction into this country from Europe. Similar activity was begun in Western States where infections had spread. Afterwards Blister Rust made its entrance into Northern Virginia and was threatening Southern White Pine. Thus with available funds this work began in Tennessee May 7, 1934 under the supervision of Mr. Roy G. Pierce, District Supervisor as a preventive against its entrance to this state.

Fortunately the White Pine Blister Rust has not been found in Tennessee to date. Our survey for the period of this report indicates very little insect damage, but many trees were dead or dying from heart rot (Trametes pini). These infected trees were usually over 100 years of age and were probably left because of difficult logging conditions.

Blister Rust Control on Tennessee National Forests during 1934 is as follows:

	Pine Acreage	Acreage Protected
Unaka National Forest		
W. H. Robens	515	1,715
P. A. Swarthout	2,407	6,345
Cherokee National Forest		
R. M. Beeman	2,950	3,910

Form B.R.C. - 5A "Statistical Report of Ribes Eradication Work Under E.C.W." which accompanies the report is a more detailed report of the above activities.

Mr. Joe Manley, Forestry Technician of the Smoky Mountains National Park began a survey of the park area and completed the same in 1933. No separate work program was carried out in 1934. The results of his 1933 Survey are as follows:

Total acreage of pine covered --- 1,825 acres.
Total bushes destroyed - Cultivated 14 - Wild 2.

Eradication work in Bledsoe and Rhea Counties was first checked by W. E. Duggan and A. H. Moss, Agents, either in strips or individually by following the crew. As the crew was inexperienced the more dense areas were checked by crew members after several strips had been completed. Dr. J. F. Martin, Senior Pathologist, and Mr. Roy G. Pierce, Associate Pathologist, of the Washington Office, checked a portion of this area where eradication was heaviest. The crew foreman had the responsibility of checking the crew and with reasonable speed only a few plants were left.

Small plots were laid out in Bledsoe County in Ribes curvatum growth to determine sprouting ability. Many of the crown roots were cut completely out to determine whether or not the branch roots would sprout. Later observations indicated that these branch roots had sprouted and thus made complete eradication more difficult when plants were eradicated in dry, hard soil. Observation also indicated that fire damage resulted in dormancy of the roots for a period, but they would sprout in late summer following a winter's fire. This was true of the area observed, but is not necessarily true for all plants.

Posters or explanatory charts were placed at public places as postoffices, courthouses, and stores. Upon approval newspaper articles were printed in county newspapers explaining the purpose of the work. This resulted in many good contacts and served to introduce the agent to the inhabitants.

A roadside exhibit was placed in the Tennessee Valley and Industrial Fair in an exhibit of the Tennessee Forest Service.

A set of Ribes specimens has been collected for distribution to cooperators and individuals concerned with white pine protection.

Plans for 1935 consist of the following estimates:

Personnel	Period	Salary	Exp.	Total
State Leader	7/1/35-6/30/36	$1,920	$2,500	$4,420.00
3 Field Agents	6/1/35-10/31/36	1,800	1,775	3,575.00
3 Temporary Scouts	6/1/35-9/30/36	Salary & Expenses		960.00
Labor Crews (Heavy Eradication)	During current season. 7/1/35 - 9/30/36	Salary and Expenses		1,000.00
Miscellaneous				75.00
		GRAND TOTAL		$10,030.00

No legislation has been passed in Tennessee concerning this activity. The Ribes policy has been to locate bushes within the infecting zone, and leave them until entrance of the disease if they are used for edible purposes.

It is proposed to designate the natural pine region after its determination from scouting and make this a control zone.

The accompanying photographs illustrate some of the pine areas and activities of the current field season.

Tables 1, 2 and 3 are tabulated summaries of E. C. W. and N. R. A. work covering the period of this report.

Submitted by:

W. E. Duggan,
State Leader,
November 25, 1934.

LOCAL CONTROL BY N.R.A. LABOR

May 7 - Sept. 29, 1934.

County	Acres Pine Protected	Acres Worked	No. Ribes Pulled	Man days Labor & Scouts
Bledsoe	546	1,985	29,792	48 (6 Hr.) Crew 20.0 Scout
Blount	144	1,337	0	16.75
Cocke	517	4,214	23	26.18
Cumberland	2,095	10,569	1,766	31.75
Fentress *	1,670	3,769	0	2
Hamilton	227	930	0	3
Johnson	4,711	20,760	6,760	73.5
Monroe	973	5,546	0	36
Morgan	6,123	21,704	192	81.68
Pickett*	125	340	0	14.5
Polk	77	502	0	10
Rhea	967	3,456	17,042	14 (6 Hr.) Crew 25.5
Scott*	2,902	8,199	0	10
Sevier	125 Scattered	--	0	6
14 Counties Total	21,077	83,311	55,575 (A)	2,854.88

(A) Bushes unpulled are listed in County Summaries.

* Not Completed.

TABLE SHOWING OWNERSHIP OF LAND UPON WHICH LOCAL CONTROL WORK WAS DONE

Ownership	Source of Labor	Acres pine protected	Acres worked	No. Ribes pulled	Man days labor
National Forest-Unaka	E.C.W.	5,872	11,970	5,831	364.5
National Park					
State Forest					
Municipal					
Private	N.R.A. Allot-ment	21,077	83,311	55,575	6 (6 Hr. days)
T O T A L		26,949	95,281	61,406	370.5

B.R.C.-5A

U. S. DEPARTMENT OF AGRICULTURE
Division of Plant Disease Eradication

STATISTICAL REPORT OF RIBES ERADICATION WORK UNDER E. C. W.

State: TENNESSEE

Year: 1 9 3 4

Name of Town Where Camp Located and F.S. Camp Number			J.W.Lehman State Side Camp PS - 61		D. A. Swarthout CCC F-5 Unicoi	W.H.Robens CCC F-6 Hampton	F 7-Va. F 11-Tenn.	R.M.Beeman (Data to be included on supplementary report)		Totals for State
No. ~~Towns--Worked~~ Counties Worked			1		2	2	2			6
Period Work Performed			9/20-9/28		7/22-8/6	8/6-8/23	5/23-6/16 7/12-8/15			
Ave. No. Enlisted Men Per Day			8		2	2	2			14
No. Tech. Foremen and Checkers			1 Agent		1	1	1			4
Results of Ribes Erad. Work	Initial Erad.	Total Acreage Worked	69 crew *		4440	1905	1715			8129
		Acreage Pine Protected	228		1653	754	515			3150
		Ribes Pulled: Wild	5831 **		51	30	0			5912
		Ribes Pulled: Cult.			0	25	79			104
		Total Man Hrs. (Enlisted Men)	159		270	72	378			895
	Re-Erad.	Total Acreage Worked								
		Acreage Pine Protected								
		Ribes Pulled: Wild								
		Ribes Pulled: Cult.								
		Total Man Hrs. (Enlisted Men)								
	Totals Init. & Re.	Total Acreage Worked	69 crew *		4440	1905	1715			8129
		Acreage Pine Protected	228		1653	754	515			3150
		Ribes Pulled: Wild	5831 **		51	30	0			5912
		Ribes Pulled: Cult.			0	25	79			104
		Total Man Hrs. (Enlisted Men)	159		274	86	378			897
Cost of Crew Transportation			$5.00		$34.	$27.	$45.			$111.
Tech. Foremen and Checkers	Total Man Hours		40		232	120	380			772
	Total Cost	Gov't	$19.80 (B)		$150.	$75.	$124.70			$369.50
		State								

* Remainder of area was scouted and scattered Ribes pulled by Agent Lehman and Temporary Scout J. K. Nelson under N.R.A. Allotment.

** Ribes cynosbati.

(B) This is Agent's Salary which is already included in N.R.A. Sheet.

Additional Eradication will be included on supplementary report.

(COPY)

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TABLE 1

Local Control

Results of Ribes Eradication, 1934 E.C.W.

First Eradication — Tennessee

* No. of Camps	Forest or Park and Counties Worked	No. of Projects	No. of Planting Sites	Acres of White Pine Protected	Acres Worked			Ribes Pulled			Man Days Labor Used				Man Days Supervision Checker other than in field	Labor ***	Supervision Checker	TOTAL	Total Cost per Acre	Ownership
					Crew	Scouts of Agt.	Total	Crew	Scout or Agt.	Total **	Ribes per acre	Crew	Checker or Scout	Total						
4	Unaka-Johnson Forest Sullivan	28	1	2922		8060	8060	185 (A)					149	149	21.5	$226.00	$349.70	$575.70	.07	Federal Government
1	Johnson (Counties)	2	0	228	69	159	228	5831	(B) 10	5831	*(C)	26.5	5	31.5	0	31.50	19.80	51.30	.22	Va. Iron & Coal Co.
T. 5		30	1	3150	69	8219	8288	6016		5831		26.5	154	180.5	21.5	$257.50	$369.50	$627.00	.29	

* Bulk all work from a National Forest or a National Park on one line, and labor calculated at $1.00, $1.20 or $1.50 for actual days worked.

** Note if some of the bushes were cultivated, giving number in footnote. (A)104 of the total number were cultivated.

(B) Ribes cynosbati.

(C) Not practicable to compute since majority of plants were grouped heavily only in talis deposits.

*** Includes transportation.

TABLE 2

Local Control

Results of Ribes Eradication, 1934 N.R.A.

First Eradication — Tennessee

County in which work was performed	No. of Projects	Acres white pine protected	Acres Worked by			Ribes Bushes Pulled						Total all Ribes	Ribes Per Acre	Man days lab. used (6 hr. day)			Man days supvn. St. Ldr. except for S.C. & Ga.	Costs						Ownership Private Land
			Crew	Scout	Total	Crew		Scout of Agt.		Total				Crew	Scout or agt., incl. State ldr. in S.C. & Ga.	Total		Labor	Supervision: Scouts	Supervision: Dist. Agt. incldg. Ldrs. in S.C. & Ga.	* Supplies & Equipment	Total	Per Acre Wkd.	
						Wild	Cult.	Wild	Cult.	Wild	Cult.													
Bledsoe	1	546	285	1700	1985	28562		1230		29792		29792	*	48	4	52	2	118.20	17.10	23.76	10.20	169.26	.085	
Rhea	1	967	360	3096	3456	12762				12762		12762		14	2	16	1	38.40	5.70	7.92	10.41	62.43	.018	
TOTAL	2	1513	645	4796	5441	41324		1230		42554		42554		62	6	68	3	156.60	22.80	31.68	20.61	231.69	.043	

* N o t practicable to compute, because of scattered clumps, in dense areas, 2,500 - 3,500 per acre.

TABLE 3

Local Control

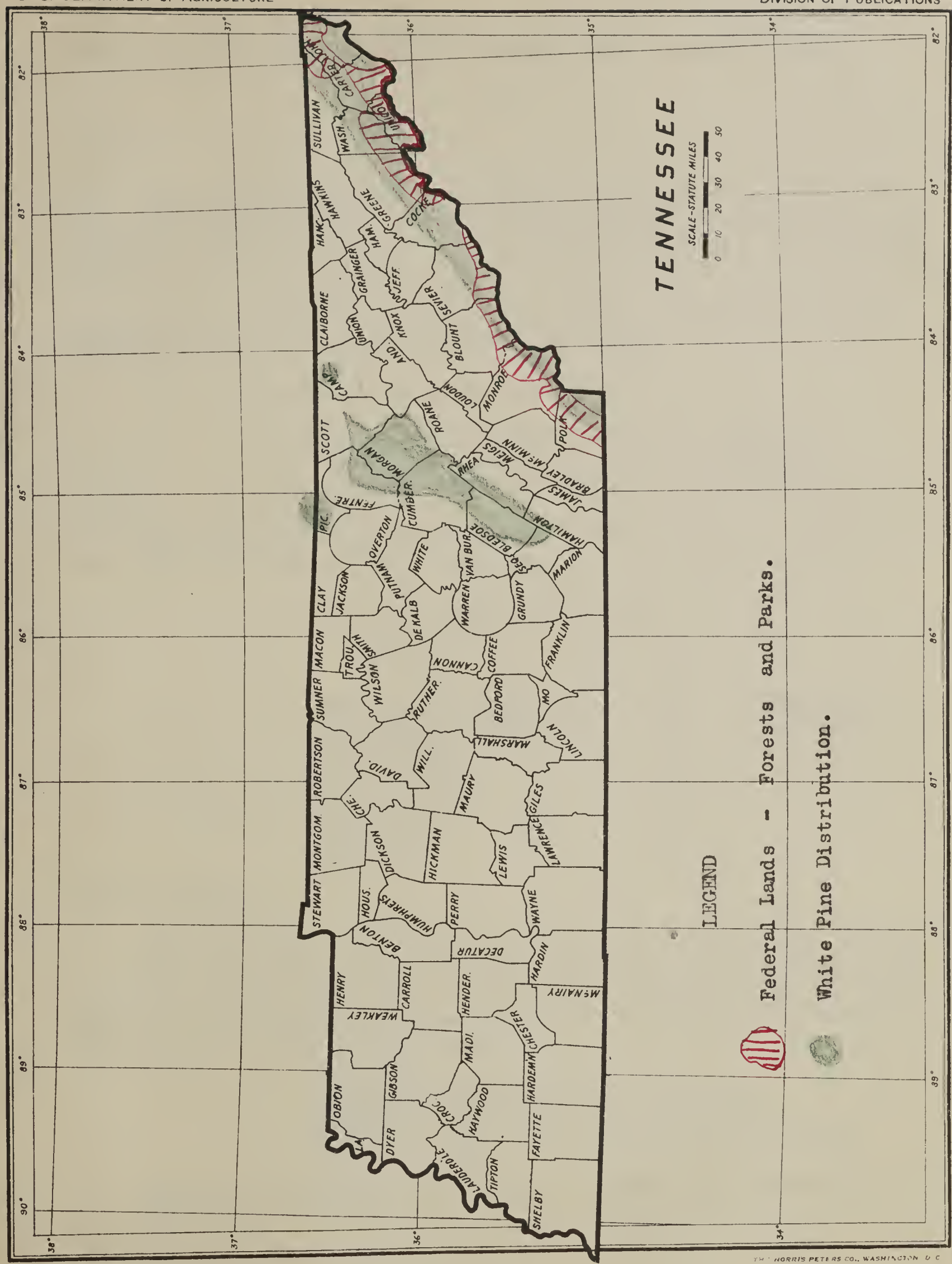
Summary of Local Control in 1934 by Agencies

Tennessee

Agencies	No. of Proj.	Planting site	Acres White Pine Protd.	Acres Worked			Ribes Pulled						Man Days Labor Used					Man Days Supvn. State Ldr. Except S.C. & Ga.	Costs				Supplies and Equipment	Total Cost	Cost per Acre Worked
				Crew	Scout	Total	Crew		Sct. or Agt.		Total		Total all Ribes	Ribes per Acre	Crew	Scout Agent Checker	Total *		Labor	Supervision: Scouts	Supervision: Dist. Agts. *	Supervision: State Ldrs. Except. S.C. & Ga.			
							Wild	Cult.	Wild	Cult.	Wild	Cult.													
E.C.W.	30	1	3150	69	8219	8288	5912	104			5912	104	6016		26.5	154	180.5	21.5	257.50	21.50	369.50		1.00	649.50	.07
N.R.A.	2	0	1513	645	4796	5441	41324		1230		42554		42554		62	6	68	3	156.60	22.80	31.68		21.61	232.68	.05
TOTAL	32	1	4663	714	13015	13729	47236	104	1230		48466	104	48570		88.5	160	248.5	24.5	414.10	44.30	401.18		22.61	882.18	.12

* Includes State Leaders in Georgia and South Carolina.

woh



November 1, 1914

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN BLEDSOE COUNTY

The white pine blister rust control program in Tennessee is concerned with the protection of white pine, native, planted, nurseries and commercial stands of sufficient value to justify the cost of protection. So far as is known no previous control work has been done in Bledsoe County.

I was assisted by one scout, R. F. Green, of Brayton, Tennessee. Work began June 1, 1934, and ended July 18, 1934.

Cost and acreage figures are as follows:

Cost of working county	$425.22
Actual pine acres	511.00
Scattered pine acres	720.00

Crew work began in Bledsoe County July 9 --- lasting six days (6 Hrs. each) and using a crew as follows:

One foreman plus six laborers.

Crew:		
John Roberson	(Foreman)	Pikeville, Tennessee
Melvin Turner	(Laborer)	
Herman Turner	"	
Frank Crawford	"	
G. C. Teeters	"	
Andy Wedel	"	
Bob Sapp	"	

Best Pine Sites:

The best pine sites of Bledsoe County are in the Eastern portion of county, growing in cool gulfs, coves and stream basins; seldom reaching out of the low lands above an elevation of 1,700 ft. Pine is seldom growing in pure stands in Bledsoe County, but is growing in a mixture of oaks, poplar, hickory and hemlock.

Maximum elevation	1,800 ft.
Minimum "	1,100 ft.
Optimum "	1,500 - 1,600 ft.

The best pine areas is recorded on the Pikeville Quadrangle and is pine area No. 3.

Ribes Conditions:

Four species of Ribes were found growing in Bledsoe County -- Ribes

Curvatum, Cynosbati, Vulgare, and Grossularia. Curvatum and cynosbati were found growing in very irregular habitats, being found at elevations varying from 1,100 - 2,000 feet on dry slopes, coves, on large rock (with very little soil for rooting), loose rock ledges, old fence rows and under dense growth of briars and laurel -- only one area was found worthy of protection in this county -- This was the Richland Creek area referring to pine area record numbering three on the Pikeville Quadrangle. Ribes Vulgare and Grossularia were found in many mountains homes, but were left unpulled according to the present Ribes policy in Tennessee. No infection was on any pine or Ribes, although both cultivated and wild bushes were found in the infecting zone.

Disease or infection observed while scouting:

White Pine Borer
Chestnut Blight
Fomes Pine
Dogwood Blight
Pine Beetle

An article was written for the Bledsonian News of Bledsoe County (Government Protecting Our White Pine).

Records:

Through the information of the District Forester, fire wardens (as Scout) and lumbermen of Bledsoe County. White pine was located, scouted for Ribes and rust and acreage measured by pacing the dimensions of each area. All pine of over five per cent stand acreage above ten acres was recorded on pine area record sheets and indicated on U. S. Quadrangle Sheet in green coloring. Ribes were shown by red dots.

Recommendations:

Due to abundance of Ribes, both in scattered and worthy pine-stands and difficulty in the eradication that was done; I think the areas should be checked within the next two years.

Submitted by:

A. H. Moss -- AGENT
Assisted by:
John Tyler, Dist. Forester, Custom House,
Chattanooga, Tennessee.

R. F. Green and Luther Brown (Scouts)

SUMMARIZATION OF RIBES CONDITIONS IN BLEDSOE COUNTY

Species	Location	No. Bushes	Pulled	Unpulled
R. Cynosbati	Chattanooga Quad. R 3 Brush Creek	In abundance		Yes
" "	Pikeville Quad. R 4 Skillen Creek	"		"
" "	Pikeville Quad. R 5 Crystal Creek	"		"
" "	Pikeville Quad. R 7 Pine Bluff Branch	Scattered		"
R. Curvatum	Pikeville Quad. R 8 Lowry Creek	6,290	Yes	
" "	Pikeville Quad. R 6 Richland Creek	22,272	"	
R. Cynosbati	Pikeville Quad. R 9 Lowry Creek	1,230	"	
" "	Pikeville Quad. R 10 Bridge Pole Creek	Scattered		Yes
" "	Pikeville Quad. R 1 Glade Creek	In abundance		"
R. Vulgare	Jude Edmondson, Chattanooga Quad. (R 5) Ogden, Tenn.	25		"
" "	W. E. Winsett-Chattanooga Quad. (R 6) Ogden, Tenn.	150		"
" "	Richey, W.B., Chattanooga Quad (R 7) Ogden, Tenn.	50		"
" "	Van Ferguson, Pikeville Quad. (R 11), Brayton, Tennessee.	200		"
R. Grossularia	R.F. Green, Chattanooga Quad. (R 1) Brayton, Tenn.	10		"

(Continued on page 24)

(Continued from page 23)

Species	Location	No. Bushes	Pulled	Unpulled
R. Grossularia	Thos. Selman, Chattanooga Quad. (R 2, Brayton, Tenn.	100		Yes

---

R 1 indicates Wild Ribes.

(R 1) et cetera, indicates cultivated Ribes.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN BLOUNT COUNTY

I As far as I know no previous detailed work relative to Blister Rust Control had been conducted in Blount County.

II The county survey was conducted by myself with the assistance of A. C. Long, Walland, Tennessee. Work began May 14, and was completed June 9, 1934.

III White Pine Sites ---- Elevations

Maximum elevation	.....	1,700 Ft.
Minimum "	.....	1,075 Ft.
Optimum "	.....	1,100 Ft.

The majority of white pine stands were second growth trees. In almost every case trees of an appreciable marketable size had been cut. Stands of pines were found principally in flats near streams with the trees extending up either side of slopes for a short distance. The pines however were not restricted to streams as the largest tract found in the county was at least a mile from any creek or branch. It seemed to matter little regarding a definite slope because white pines were found on both in about equal quantities. They grew more higher on the northern than on the southern slope. Observations revealed that white pines preferred a relative rich soil with an abundance of moisture. There were eleven different stands of white pines in the county.

IV Ribes Conditions:

Only the cultivated gooseberry Ribes grossularia, was found in the county and this species was scarce. The bushes wherever found were in a garden along the fence. Cultivation within a few feet of the bushes seemed to keep them in a much more thrifty condition. Altitude varied as much as it did for the white pines. In only one place were Ribes found near a stand of pines; for details of same look at pine area sheet No. 7.

V Diseases Observed:

Chestnut blight
Anthracnose of oak
Worm injury of yellow pine
White pine tip weevil
Fomes pine --- Heart Rot.

VI Records

Pine area record sheets were filled out when boundaries of white pines were sufficiently large enough to warrant such and all data available were accurately recorded on the pine area sheets. Wherever wild Ribes were located, ecology sheets were properly filled out.

The scout and I covered all territory adjacent to streams where there was a possibility of finding white pines. Observation soon taught us

[illegible]

[illegible]

[illegible]

the likely places for white pines, and it was unnecessary to look in localities that were low and flat. We inquired from time to time regarding condition and extent of acreage of pines. Valuable and reliable information was secured in this way.

After locating and scouting an area of pines the location was designated on the U. S. G. S. sheet by a green mark.

If a large number of cultivated Ribes were found within protective zone of a boundary of white pines, a detailed map of the area was made and attached to the pine area sheet. If only a few bushes were found no map was made but an exact location is given in county summary. The number on the quadrangle and number on pine area sheet correspond, so each boundary of pines must double check. Two quadrangles were used in working county -- Knoxville and Loudon.

Recommendations:

There is no need of reworking the county within the next few years because white pines are too scarce in the county. I am speaking of only private land as that is all I covered. Mr. Joe Manley, Forester Technician of Smoky Mountain National Park worked the Smoky Mountain National Park which includes a portion of Blount County.

Figures as to acreage and cost are as follows:

Actual acreage	Actual plus 900 Feet.	Scattered
144	1,377	285

Total Cost of survey $279.71

Submitted by:

Troy Jones - Agent

Assisted by:

F. J. Shulley, Dist. Forester, Knoxville, Tenn.

A. C. Long, Walland, Tennessee.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN COCKE COUNTY

****

As far as I know no previous work was conducted regarding the control of white pine blister rust within Cocke County. I initiated the first program outside the Pisgah National Forest and the Smoky Mountain National Park.

I was assisted by one scout --- B. P. Ford, Hartford, Tennessee. Work was begun in the county on June 12, and was completed on July 24.

White Pine Sites

Maximum Elevation ..... 2,400 Ft.
Minimum " ..... 1,100 "
Optimum " ..... Between 1,800 & 2,000 Feet.

Stands were found principally in coves and along streams extending a short distance up either side of the slope. I could not see that the trees had any preference regarding a definite exposure. They seemed to do about as well on one side as they did on another. By far the majority of stands was in a mixture. Sometimes small pure stands could be found within a boundary of white pines and hardwoods.

Ribes Condition

Three species of Ribes were found in the County:

R. Americanum, R. Vulgare, and R. Grossularia.

These three species were located in gardens or in one side of the yard and was or had been cultivated. Only a few bushes were found in each place.

Infections or diseases noticed.

Chestnut Blight
Rust of Hawthorn
Some disease resembling blight attacking the oak.
A serious worm injury to yellow pines.

Records

Generally it was not difficult to locate the pines and Ribes on topographic map due to the accuracy of same and the aid scout. When a distance could not be checked with the speedometer it was paced by me or the scout. By means of a compass, I could obtain correct bearings and exposures. Pine area record sheets were filled in where either ten acres of white pines were found or a small private wood lot was inhabited with pine trees. For the number on pine area sheet there is a corresponding number on the quadrangle. Two quadrangles were used in working Cocke County, Mt. Guyot and Asheville. Pine area numbers as well as Ribes locations are listed consecutively on each.

Summary of Active Duty Officers and Enlisted Men in Local Area Instructions

As the war in Europe was drawing to a close, we were concerned in getting our boys of Italian ancestry back safely from Europe. I believe we did a very good job of getting the right National Guard Units and the Regular Enlisted Men.

I am enclosed by our Army ---- E. A. Ford, Director, Personnel, who was in the Army Air Corps, and who was employed at Long Beach.

Local Case Study

Sergeant Director ..... 6,000 ft.
Sergeant " ..... 1,500 ft.
Sergeant " ..... Average 1,500 a week Item.

Sergeant Ford Personnel Director is here, and doing a very good job. Sergeant Ford is Italian, son of the [illegible]. Sergeant Ford was the least the Army Air Corps [illegible] a [illegible] position. Sergeant Ford is a good man, as well as one who is long out of the service. He has been helping to place the [illegible] in a [illegible]. Therefore, small [illegible] which is [illegible] a [illegible] of [illegible] and [illegible].

Place Description

Place [illegible] is [illegible] Front in San Pedro.

A Building in Italian and Italian Section

Front [illegible] Italian [illegible] is [illegible] [illegible] [illegible]

Asheville. Pine area numbers as well as Ribes locations are listed consecutively on each.

Since no Wild Ribes were found, no ecology sheets had to be filled out. Whenever cultivated Ribes were located near either scattered pines or stands of pines, their locations were designated on the quadrangle by an R with a circle around it as (R). A number placed at the right hand side of R on the quadrangle corresponds to the number in county summary to (R) (R 2) et cetera.

Recommendations

I covered the country quite thoroughly and cannot see why it should be reworked sooner than four or five years. If the work in the state reveals the disease to be present then the above time should probably be shortened.

Twenty-nine separate white pine stands were found in county.

Figures as to acreage and cost are as follows:

Actual Acres	Actual plus 900 Ft.	Scattered
517	4,214	400

Total cost of working county was $462.71.

Submitted by:

Agent - Troy Jones

Assisted by:

F. J. Shulley, Dist. Forester, Knoxville, Tenn.

District Forest Fire Warden - B. P. Ford, Hartford, Tenn.

SUMMARIZATION OF RIBES CONDITIONS IN BLOUNT COUNTY

Species	Location	No. Bushes	Pull-ed	Unpull-ed	Quad-No.	Relation to White Pines
R. Grossularia	Mr. Walt Brewers garden at upper end of Carr Creek	5	-	Yes	Knox-ville (R_1)	Very few pines nearby
"	Property of T. D. Allman near Alle-gany Station on Four Mile Creek	4	-	"	Loudon (R_1)	Scat-tered Pines
"	Dick Waters 2½ miles from Walland on road up Reed Creek	10	-	"	(R_2) Knox-ville	Scat-tered Pines
"	Mrs. Davis (Widow) on Chestnut Flat Branch	12	-	"	" (R_3)	Pines Scarce
"	John Sloane at forks of Ellejoy Creek	13	-	"	"(R_4)	Pines Scarce
"	Jeff Waters, 1½ miles from Walland on road up Reed Creek	18	-	"	" (R_5)	Scattered Pines
"	Art Long, one mile from Walland on main road up Reed Creek	6	-	"	" (R_6)	Few Pines
"	S. R. Emert, ½ mile from Townsend, 200 yds. from High-way # 73.	15	-	"	" (R_7)	Boundry white pines within 900 '

(R) indicates cultivated Ribes.

(R_1), (R_2), etc. corresponds to number on quadrangle.

SUMMARY OF CASE HISTORIES IN TOXIC TRIAL

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(a) [illegible]

(b) [illegible] [illegible] [illegible]

SUMMARY OF BLISTER RUST CONTROL WORK IN CUMBERLAND COUNTY

The White Pine Blister Rust Control program in Tennessee is concerned with the protection of white pine, native, planted, nurseries and commercial stands of sufficient value to justify the cost of protection. So far as is known no previous control work has been done in Cumberland County.

I was assisted by two scouts who were J. W. Pugh, Grandview, Tennessee and Sherman Cox, Daysville, Tennessee. Work began in this county August 25th, and was completed September 30, 1934.

Cost, actual and scattered pine figures are as follows:

Cost of working county	$487.17
Actual pine acres	2095.
Scattered Pine Acres	1333.

No crew was used in Cumberland County. One area was eradicated by use of three extra scouts for one day only.

Best Pine Sites:

The best pine sites occur along the extreme eastern and northern parts of Cumberland County. The principal part of the pine acreage was found growing in stream basins and in coves and gulfs. My observation indicates pine grows best in cool, damp, rich soils. Pine seldom appears in pure stands other than in small areas, but in growing in a mixture of oaks, hickory, poplar and hemlock.

The majority of all pine of this county is of second growth, having been cut in the last few years. However several areas were left, because of difficult condition of logging. Pine in this section has shown very rapid growth and many sections have reseeded and are nearing commercial value.

Elevation figures are as follows:

Maximum elevation	1800 feet
Minimum "	1200 "
Optimum	1400 - 1500 feet

The best areas are recorded on the Kingston quadrangle, and are pine area record sheets numbering 1, 2, 6, 7, 26, 33, 35 and 36. These areas appear on cool northern slopes and stream gulfs; very seldom reaching an elevation above 1,600 feet.

Ribes Conditions:

Two species of Ribes were found in Cumberland County and were Ribes Cynosbati and Grossularia.

The habitats of Cynosbati was more uniform in this section. These bushes grow largely in loose rock ledges at an elevation of 12 - 1400 feet. This species apparently kept its true habitat in growing in moist shady places and were growing in large scattered patches; the plants being rather large in size.

One area was eradicated on Yellow Creek which is located on Wartburg Quadrangle - R2. This work was done by using extra scouts. Ribes Grossularia was found growing around several mountain homes and were located on map and left unpulled according to our Ribes policy in Tennessee. No infection was found on either Ribes or pine -- although some of the cultivated bushes were within the protective zone of pine areas.

Disease and infections found in scouting:

1 - White Pine Borer
2 - Chestnut Blight
3 - Fomes Pini

Records:

Through the information of District Foresters, Fire Wardens (as Scouts) and lumbermen of Cumberland County; the white pine was located, scouted for Ribes and rust and acreage measured by pacing dimensions of each area. All pine stands of over five per cent stand with acreage of 10 and over, were recorded on pine area record sheets and plotted on U. S. Quadrangle Sheets in green coloring. The Ribes are shown in red dots and numbered as follows: Wild Ribes R_1, Cultivated Ribes (R_1) et cetera.

Recommendation:

Several areas have Ribes where the pine is not of sufficient value at present to justify eradication. These areas should be further considered because of their potential value. Also a couple areas were reported to have Ribes and I was unable to find them. These areas were Otter, Lick and Craborchard Creeks. I think that this area should be reworked within three years.

Submitted by:

A. H. Moss, Agent.

Assisted by:

Sherman Cox, Daysville, Tenn.
Clyde Hamby, Hebbertsburg, Tenn.
Andrew Hamby, Crab Orchard, Tenn.
Clarence Young, Daysville, Tenn.

[illegible]:

[illegible]

[illegible]

[illegible]

ERADICATION ON YELLOW CREEK - CUMBERLAND COUNTY

****

Ribes cynosbati was found in sufficient abundance here to justify crew work for a short period. An attempt was made to employ local men within the vicinity for necessary eradication. Since the period for work was of short duration and relief would automatically cease for the period of employment; no crew could be obtained. Agents Moss, Duggan, and Temporary Scout Cox eradicated one day and additional scouts completed the eradication. Past experience shows that a higher degree of efficiency is obtained with these men.

U.S. DEPARTMENT
RECEIVED

SUMMARIZATION OF RIBES CONDITIONS IN CUMBERLAND COUNTY

SPECIES	LOCATIONS	No. BUSHES	PULLED	UNPULLED
R. Cynosbati	Wartburg, Quad R_2 Yellow Creek	1,766	YES	-
"	Wartburg Quad R_1 Daddy's Creek	-	-	YES
"	Wartburg Quad R_3 Clear Creek	-	-	"
R. Grossularia	Kingston Quad (R_7) Clyde Mitchell, Ozone, Tennessee.	-	-	"
"	Kingston Quad (R_9) Westal, Tenn.	-	-	"
"	Kingston Quad (R_{10}) John Milligan, Daysville, Tenn.	-	-	"
"	Kingston Quad (R_8) Elmer Lewis, Westel, Tenn.	-	-	"
"	Wartburg Quad (R_4) Floyd Potter, Genesis	-	-	"
"	Kingston Quad (R_6) Jess Dorset, Ozone, Tenn.	-	-	"

R_1 Indicates Wild Ribes.

(R_1) Et cetera, indicates Cultivated Ribes.

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[illegible] OF [illegible] CONDITIONS IN [illegible] STATE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Dialers Data [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible].

SUMMARY OF WHITE PINE BLISTER RUST CONTROL IN FENTRESS COUNTY

Previous to September, 1934, no Blister Rust Control work had been done in Fentress County. Scouting of this county was more or less limited to the location of pine areas and getting data on such concerning percentage of stands, size, age, etc.

Assisting the agent was District Fire Warden J. D. Stephens of Allardt, who began work September 18th, and District Fire Warden Dester Thompson, who began work September sixth. Stephens scouted the territory from Allardt tower on the north to Crooked Creek on the South, and, from York Highway on the West to the Morgan County Line on the East. Scout Tompson worked the territory in Fentress County North of Laurel Creek and East from Hatfield Creek to the Scott County line.

Before Ribes were found in Western Morgan County it was believed that wild Ribes did not grow in the Cumberlands and further north than Cumberland County. In fact, constant inquiry and the exhibition of Ribes specimens to natives living back in the hills of Morgan, Scott and Fentress Counties, seemed to bear out this opinion. Therefore, no intensive search for wild Ribes in Fentress and Scott Counties was carried on this season, the work being principally the location of pine areas and cultivated Ribes.

Ribes cynosbati was reported to be on Potter Branch in Scott County near the Fentress County line, and on Clear Creek in the Southern part of Fentress, but these reports came in the first of October after the field period of B.R.C. work had been completed. These areas are to be scouted in November.

On September 21st, Ribes cynosbati was found to be growing in abundance in the extreme western part of Morgan County, and under conditions which can be found in many places throughout the present known pine areas in Fentress County. It is, therefore, considered advisable by this agent that an exhaustive search be made for the location of Wild Ribes in the pine areas of Fentress and Scott Counties, especially so in the southern part of those counties.

White pine in the northern part of Fentress County was mostly very old virgin timber. Probably the best stand was that to the Southwest of Dirt Rock House Tower along Laurel Fork Creek. There is little if any reseeding of white pine in upper Fentress County.

Best stands occurred at about 1,450 feet elevation, growing along streams and on top of the ridges.

The lowest elevation at which white pine in this county was found

growing is 1,200 feet. The highest elevation, 1,500 feet.

Following is a list of the locations of cultivated Ribes in Fentress County. (No Ribes have been eradicated.):

1 - John Finch, Allardt P. O - About 12 bushes - (R_{26}) - Wartburg Quad.
2 - Mrs. Eva Blair - Allardt P. O - About 50 bushes - (R_{26}) - Wartburg Quad.
3 - Otto Bease, Allardt P. O. - About 12 bushes - (R_{26}) - Wartburg Quad.
4 - Lawrence Blair - Allardt P. O. - About 25 bushes - (R_{27}) - Wartburg Quad.
5 - Bryan Potter - Jamestown, R. F.D. - About 25 bushes - (R_{28}) - Wartburg.
6 - Henry Pierce - R.F.D. Jamestown - About 25 bushes - (R_{28}) - Wartburg Quad.

During the current field period in Fentress County, 1670 acres of white pine running over five per cent was located and mapped at a total cost of approximately $125.91. Scattered white pine is found distributed generally along the streams.

Submitted by:

Pete Stegall

Agent 10-11-34.

Assisted by:

Dist. Forester Tom B. W. Watkins
Harriman, Tenn.
Dist. Fire Warden Dester Tompson,
Gernt, Tenn.

Dist. Fire Warden J. D. Stephens

Allardt, Tennessee.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN HAMILTON COUNTY

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The White Pine Blister Rust Control program in Tennessee is concerned with the protection of white pine, native, planted, nurseries and commercial stands of sufficient value to justify the cost of protection. So far as is known, no previous control work has been done in Hamilton County.

I was assisted by one scout, R. F. Green, of Brayton, Tennessee. Work began May 15, 1934, being completed June 1, 1934.

Cost, actual and scattered pine figures are as follows:

Cost for working county	$103.90
Actual acres of white pine	227 acres
Scattered acres white pine	440 "

The best pines occurred in the northwest corner of the county. Growing in gulf, coves, and along streams. White pines seldom grew out of the gulfs or above elevations of 1,700 feet. Few pure stands are found and grow usually in a mixture of oak, hickory and hemlock.

Elevation figures are as follows:

Maximum elevation	1,800 feet
Minimum "	1,100 "
Optimum "	1,500 - 1,600 feet

The best pine areas are plotted on the Chattanooga Quadrangle and pine area record sheet numbered one and two.

Ribes condition:

Only one species of Ribes were found in this county and this was Ribes Curvatum growing on the high cliffs of Soddy Creek and extending up the smaller streams of the creek. No white pines were within infecting distance.

Infections or diseases noticed in scouting:

White Pine Borer
Chestnut Blight
Aphid Pini
Dogwood Blight

Records:

Through the information of county agents, District Foresters, Fire Wardens and lumbermen; white pine was located, scouted for Ribes and rust and acreage measured where an area of over ten acres of five per cent stand was found. These were recorded on pine area record sheets and indicated by green

coloring on U. S. Quadrangle Sheet and Ribes in red dots.

Recommendation:

White pine in this county had recently been cut off and was reproducing rapidly. Since Ribes are in adjacent areas I think this county should be checked as soon as the rust is found in this State.

SUMMARIZATION OF RIBES CONDITIONS

in

HAMILTON COUNTY

SPECIES	LOCATION	No.	PULLED	UNPULLED
R. Curvatum	Head streams and along main gulf. Soddy Creek	Chattanooga Quad- R_2 - In abundance.		YES

R_1, Indicates Wild Ribes.

(R_1), Et cetera Indicates Cultivated Ribes.

Submitted by:

A. H. Moss, B. R. C. Agent

Assisted by:

John Tyler, Dist. Forester, Custom House, Chattanooga, Tenn.

R. F. Green, Scout, Brayton, Tenn.

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SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN JOHNSON COUNTY

Up to July 9, 1934, no work had ever been done in Johnson County concerning scouting or eradicating Ribes or any work at all on private land.

Figures as to cost and pine acreage are as follows:

Actual pine area in county	4,711 acres.
Scattered pine area in county	800 " .
Total acreage in county worked	20,760 " .
Total cost for working county	$1,086.27

Personnel:

J. W. Lehman, B. R. Agent
July 1, to October 10, 1934.

M. M. Arnold, Scout	)	
J. K. Nelson, "	)	
Will Stout, "	)	Mountain City, Tennessee.
R. R. Wilson, "	)	
W. T. Muse, "	)	

The best pine sites seem to be between 2500 - 2600. However, in Shady Valley there seems to be very good white pine growing at an altitude of 2800 feet. The pine in Shady Valley is following along the lower portions of the valley. With the exception of Shady Valley the pine seems to follow the watersheds fairly close. The pine is mixed mostly with oak and what is locally called the black pine. Very few of the stands are virgin. Most of the stands are second growth coming in on cut-over land. There is scattering pine all over Johnson County.

Figures as to elevation are as follows:

Maximum elevation ----------	3,400 feet)	
Minimum " ----------	2,200 ")	Private
Optimum " ----------	2,500 - 2600 feet)	Land

White Pine will run about 3,400 feet on Federal Land.

The majority of the pine occurs in mixtures, but there are a few pure stands.

All the Ribes (Wild-Cynosbati) found in this county were in rough, very rocky hollows. They were on the South slope for the most part. When they did occur on the North Slope, they were few and very scattering. They were found to sprout by layering and from root crowns and small roots.

Paragraph to be substituted in Lehmans summary
(Johnson County)

The prickly gooseberry(Ribes cynosbati) found in Johnson County grew in rough,rocky hollows or talus deposits.Their greatest occurrence was on south slopes and were usually scattered on north slopes. Observations indicated that the bushes would sprout by layering and from root crowns and small roots.Elevation ranged between 2500-3400 feet for observed sites.Measurements and observations indicate that the average bush will approximate from 250-300 feet of live stem.Eradication is difficult because of entwining roots in the imbedded stones.During the past season 10,109 wild bushes were eradicated up to the completion of the present season.Initial eradication on the south end of Doe Mountain is to be started with the opening of the 1935 season.

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No infection was discovered of the rust. There were a few cases of where the Dendroctonus beetle had been working. This always followed after the tree had been severely trimmed.

The pine and Ribes locations are numbered on the map according to Quadrangles, the corresponding numbers for the pine areas can be found on the pine area record sheets (B.R.86 forms) and the Ribes numbers on the county summary sheets.

The area should be reworked in 3-5 years if possible or sooner if the disease is noticed anywhere near as the county is essentially an optimum site for white pine and young growth is continually coming up.

Several posters were placed about town, one newspaper article published and about 400 pamphlets distributed among the pine owners. A lot of contact work was carried on and this helped considerable in the people cooperating about having their gooseberries and currants pulled.

Only one person in the entire county refused to have their bushes pulled. They only had two bushes.

Submitted by:

J. W. Lehman,

B. R. Agent.

Assisted by:

Frederick J. Shulley, Dist. Forester, Knoxville,
M. M. Arnold) Dist. Fire Wardens, Mountain City, Tennessee.
Will Stout)
R. R. Wilson, Deputy Fire Warden, Mountain City, Tenn.
W. T. Muse, Mountain City, Tenn.
J. K. Nelson - an old logger who knows more about the county than anyone else in it, Mountain City, Tennessee.

""""""""""

Dr Lutwidze was interrupted at his work. There were a few cases of [illegible] the Bacteriologic Institute was [illegible] visitor. She also a [illegible] [illegible] the [illegible] [illegible].

The [illegible] [illegible] [illegible]

SUMMARIZATION OF RIBES CONDITIONS IN JOHNSON COUNTY

Species	Location	Pulled	Unpulled
R. Cynosbati	R_2, Furnace Creek	3,391	-
"	R_6, Mrs. V. Rambo Property	6,500	-
"	R_5, Above road opposite house belonging to Mrs. Frances Halloway at lower end of Doe Mtn.	-	Yes
"	R_4, On property of Mrs. Grindstaff (Widow) at lower end of Doe Mountain.	-	"
"	R_3, At Fritz Schoolhouse, Below Neva.	-	"
"	R_1, Head of Preston Hollow, 3 miles N. of Mountain City.	-	"
"	R_1, Head of N. fork of Owens Branch, under top of Pond Mountain.	-	"
"	R_2, Head of N. Fork of Cold Branch.	-	"
"	R_{14}, Head of the Hopper Branch on Doe Mountain.	18	-
R. Americanum	(R_3), Jean Wagner, at house where Furnace Creek crosses road going up the creek	243	-
"	(R_4), Bud Foster, at his mountain place out Cold Springs Road.	18	-
Cultivated Gooseberry	(R_5), Ed Garland, at his farm out on Cold Springs Road	10	-
R. Americanum	(R_6), Rody Butler, at house behind Fair Ground.	1	-
R. Americanum & Cultivated Gooseberries	(R_7), At houses where negroes live on Holy Hill.	16 16	2 at Charles Ward's place, prob. Amm.

(Continued on Page 42)

SUMMARIZATION OF RIBES CONDITIONS IN JOHNSON COUNTY

(Continued from P. 41)

Species	Location	Pulled	Unpulled
Cultivated Gooseberries & Currants	(R_9) At home of Mate Shoun	-	Yes
Cultivated Gooseberries & Currants	(R_{10}) At home of Hugh Berry	17	-
Cultivated Gooseberries & Currants	(R_{11}) On place of Henry Guy	67	-
Cultivated Gooseberries & Currants	(R_{12}) On place of Mrs. V. Rambo	130	-
Cultivated Gooseberries & Currants	(R_{13}) On place of J. C. Rambo	-	Yes

R_1 Indicates Wild Ribes.

(R_1) Et cetera indicates Cultivated Ribes.

[illegible] OF TABLE [illegible] IN [illegible]

[illegible]

(Continued from T. [illegible])

[illegible]	[illegible]	[illegible]	[illegible]
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([illegible]) [illegible] [illegible].

SUMMARY OF WHITE PINE BLISTER RUST CONTROL IN MONROE COUNTY
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I. I am not able to say whether any previous work had been carried on in Monroe County. As far as I know the present work was the initial survey. Work on the Cherokee National Forest was done by a National Forest Checker.

II. Personnel:

I was assisted by two scouts, John Murphy, Tellico Plains, Tennessee, and L. F. Haynes, Vonore, Tennessee. Work was begun in the county on August seventh and completed September 14, 1934.

III. Description of Best Pine Sites

Maximum elevation	.....	2,200 feet.
Minimum "	.....	1,000 " .
Optimum "	.....	1,200 - 1300 feet.

White pines occurred mainly along stream courses and up coves or hollows adjacent to a creek. No stands were pure. All were in a mixture with oaks, poplars and yellow pines as the principal trees in the mixture. It was rare to find white pines in lowlands. On Flat Creek and Falls Branch, virgin trees could be seen. These two streams are in the Citico District and escaped logging although the Babcock Lumber Company logged the entire area quite thoroughly. By far the majority of the entire county had been cut over at least once, sometimes three times.

The best boundaries of white pines are in the vicinity of Rafter and on Watershed of Citico Creek. Seventeen separate stands of white pines were found in the county. Two quadrangles ---- Murphy and Loudon were used in working this county.

IV. Ribes Conditions

R. Grossularia was found in its usual habitat, garden and back yards.

R. Cynosbati was found in two places on Big Fodderstack Mt. They were growing on moist moss covered rocks at elevations of 3500 - 3750 feet. None could be found lower down on the mountain nor along streams which headed in the mountain. White pines were miles away so the danger of the two hosts being close enough together to spread the blister rust is nil.

V. Diseases

1 - Fomes pini.
2 - A worm was attacking yellow pines and something was killing the hemlocks.
3 - Chestnut Blight.

[illegible]

[illegible]

[illegible]

VI. The method of locating pines and Ribes and the manner of keeping records on work did not vary from that of other counties which is working with temporary scouts while scouting and mapping the pine areas.

VII. Recommendations

There are some valuable and promising white pine land in Monroe County so it would be advisable to work the county again within 4 - 6 years.

Figures as to acreage and cost are as follows:

Actual Acres	Actual Plus 900'	Scattered
973	5,546	500

Cost of working county is $478.50

Submitted by:

Agent - Troy Jones

Assisted by:
F. J. Shulley, District Forester,
Knoxville, Tennessee.

District Forest Fire Warden,
John Murphy,
Tellico Plains, Tenn.

Deputy Fire Warden,
L. F. Haynes,
Vonore, Tennessee.

SUMMARIZATION OF RIBES DATA
/Monroe County/

Species	Location	No. of Bushes	Pull-ed	Un-pull-ed	Quad. No.	Relation to White Pine
R. Grossularia	James Carden, Property, main road from Tellico Plains to Rafter	3	-	Yes	(R_1) Murphy	Scattered trees nearby
"	Jim Shaw, 1 mi. from Rafter, ½ mi. from main rd. to Tellico Plains	2	-	"	(R_2) Murphy	"
"	John Shaw, 2 mi. from Rafter on new govt. rd. ovr. Cane Mtn.	8	-	"	(R_3) Murphy	Very few pines
"	Ben Haynes, near mouth of Little Citico Cr. at end on rd. up main Citico Creek	15	-	"	(R_4) Murphy	Scattered Pines
R. Cynosbati	Harrison Cove on Big Fodderstack Mountain	Many	-	"	R_5 Murphy	No pines near
"	Spruce thicket on Big Fodderstack Mtn.	"	-	"	R_6 Murphy	No pines near

R - Wild Ribes.
(R) - Cultivated Ribes.
R_1, R_2, etc. corresponds to number on quadrangle.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL IN MORGAN COUNTY

Period May 15th to Oct. 31, 1934.

--- Foreward ---

Previous to May, 1934, no work was performed in Morgan County in connection with White Pine Blister Rust Control.

No complete survey of the white pine in the county has been made before as no figures or locations were available for the entire county.

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Scouts employed as assistants of the B. R. C. Agent during the initial survey of Morgan County are: Guy Jones, Coalfield, Tennessee, who began work May 18th, completed his 30 - day working period as a temporary scout and was retained by official appointment until October 31 and J. W. Jones, Coalfield, Tennessee, who began work September 25th and worked four days as a temporary scout.

During the current period of investigation in Morgan County, 8,406 acres of white pine, running on the average of five per cent and over, was located, scouted and mapped, together with the 900 feet. "Protective Zone" around each stand of white pine. Since white pine trees can be found everywhere in the county except on the higher ridges and cleared farm lands; there are approximately 21,000 acres of forest land within the county which contains scattered white pine (less than five per cent white pine to count).

Best pine sites were found in coves, along streams, and protected areas and in pure stands.

Maximum elevation of pine sites	1,500 '
Minimum " " " "	900 '
Optimum elevation " " "	1,100 '

Following is list of Ribes locations where cultivated Ribes have been eradicated:

1 - One bush - Pulled - J. W. Jones - Fairview Road. Coalfield(R_{13}) Briceville Q.

2 - One bush - Pulled - J. W. Jones - Fairview Road. In garden (R_{15})Briceville Q.

3 - 50 bushes - Pulled - Arthur Jones - Rock Bridge Rd., Coalfield (R_{12}) " "

4 - 1 Bush - Pulled - S. H. Justice - Site off highway #62 on old Doc Taylor Road, 4 miles from Wartburg - (R_{14}) Wartburg Quadrangle.

5 - 26 Bushes - Pulled - Lawrence Estes - One mile from Coalfield, on Highway #62 - (R_5) - Briceville Quadrangle.

6 - 3 bushes - Pulled - Garden tended by Frank Strickland - edge of Coalfield, Tennessee. (R_8) - Briceville Quadrangle.

7 - bush - Pulled - Wess Ruffner - Coalfield - (R_{10}) - Briceville Quadrangle.

8 - 2 bushes - Pulled - Jerry West - one mile from Coalfield on Back Valley Road. (R_3) - Briceville Quadrangle.

9 - 12 bushes - Pulled - Albert Jones - two miles from #62 Highway on Little Brushy Mountain Road - (R_{20}) - Briceville.

10 - 12 Bushes - Pulled - On C.C.C. Road to Frozen Head Tower, about ½ mile after leaving main road from Petros to Fork Mountain. Site is back end of clearing off left side of road - (R_{34}) - Briceville Quadrangle.

11 - 3 bushes - Pulled - Rowell Woods - ½ mile off Highway #62, on a lane turning off highway to south near Petros Road - (R_{25}) - Briceville Quadrangle.

12 - 9 bushes - Pulled - Mrs. Portewood - ½ mile from Petros Road on Highway #62 - (R_{31}) - Briceville Quadrangle.

13 - 5 bushes - Pulled - Millard Jones - ¼ mile from Petros Road on Highway #62 - (R_{32}) - Briceville Quadrangle.

14 - 4 bushes - Pulled - Jasper Stoneipher - 2½ miles from Coalfield on Oliver Springs Road - (R_6) - Briceville Quadrangle.

15 - 25 bushes - Pulled - Fritz Leophord - Cross #62 Highway from Joyner School House - (R_{10a}) - Wartburg Quadrangle.

FOLLOWING IS A LIST OF RIBES LOCATIONS WHERE CULTIVATED RIBES HAVE NOT BEEN PULLED:

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1 - 50 bushes - Charles Clark - Coalfield - (R_{16}) - Briceville Quadrangle.

2 - 60 bushes - James Lyles - Solomon's Hollow off Fairview Road two miles from Coalfield - (R_{17}) - Briceville Quadrangle.

3 - 1 bush - Jim Moore, R.F.D. #2, Coalfield, on Jim Adcock Road. (R_{14}) - Briceville Quadrangle.

4 - 1 bush - Sam Alcox - Blue Gem Hollow - 3½ miles from Coalfield on Rock Bridge Road - (R_2) - Loudon Quadrangle.

[illegible] - 1 Pen - Jolly - [illegible] - [illegible] - [illegible]

5 - 1 bush - Bob Clark - Southward down H. & N. E. R.R., about five miles from Coalfield and $\frac{1}{2}$ mile below Blue Gem Cut or Futtrell Hollow - (R_1) - Loudon Quadrangle.

6 - 53 bushes - Jim Williams - Old Whetstone Mountain Road, three miles from Rock Bridge - (R_{12a}) - Briceville Quadrangle.

7 - 104 Bushes - Ola Owens - three miles from Coalfield on Back Valley Road - (R_1) - Briceville, Quadrangle.

8 - 10 bushes - Lon East - three miles from Coalfield on Back Valley Road - (R_2) - Briceville Quad.

9 - 2 bushes - Halk Green - four miles from Wartburg on Highway #62 - (R_{21}) - Wartburg Quadrangle.

10 - 2 currants - Lee Terry - four miles from Wartburg on Highway # 62 - (R_{22}) - Wartburg Quadrangle.

11 - 2 bushes - Maggie Frances - One mile off Highway #62 on Liberty Road - (R_{24}) - Wartburg Quadrangle.

12 - 3 bushes - Myrtle Brazzle - $1\frac{1}{2}$ miles off Highway #62 on Liberty Road - (R_{23}) - Wartburg.

13 - 2 bushes - John Bagetzie - On Liberty Road and $\frac{1}{4}$ mile off old Chess Lemons Road, $1\frac{1}{2}$ miles from Highway #62 - (R_{13}) - Wartburg Quadrangle.

14 - 1 Bush - Ernest Erkson - Chess Lemons Road - $1\frac{1}{2}$ miles off Liberty Road - (R_{12}) - Wartburg Quadrangle.

15 - 3 bushes - Greely Bradlove - $\frac{1}{4}$ mile from Liberty Road on Doc Taylor Road - (R_{15}) - Wartburg Quadrangle.

16 - 1 currant - Doc Taylor Road - Pettit Sisgers - (R_{16}) - Wartburg Quadrangle.

17 - 4 bushes - Charley Knight - Doc Taylor Road - (R_{17}) - Wartburg Quadrangle.

18 - 6 bushes - J. H. Chapman - R.F.D. #1, Wartburg - R_{11} - Wartburg Quadrangle.

19 - 1 bush - Javis Moore - five miles from Wartburg on Highway #62 - (R_{18}) - Wartburg Quadrangle.

20 - 3 bushes - G. E. Bazler - Beech Fork & Highway #62 - (R_{19}) - Wartburg Quadrangle.

21 - 5 bushes - Gus Heidal, R.F.D. Wartburg, four miles from Wartburg on Highway #62 - (R_{25}) - Wartburg Quadrangle.

22 - 2 bushes - W. S. Holder - six miles from wartburg on Highway #62 - (R_{20}) - Wartburg Quadrangle.

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23 - 1 bush - John Bazlers - $6\frac{1}{4}$ miles from Wartburg on Highway #62 - (R_{19}) - Wartburg Quadrangle.

24 - 5 bushes - Ernest Duncan - 150 yards off Highway #62 on Little Brushy Mountain Road - (R_{23}) - Briceville Quadrangle.

25 - 5 bushes - Worth Wilson - $\frac{1}{2}$ mile from Highway #62 on Little Brushy Mountain Road - (R_{23}) - Briceville Quadrangle.

26 - 5 bushes - Joe Wilson - $\frac{1}{2}$ mile from Highway #62 on Little Brushy Mountain Road - (R_{22}) - Briceville Quadrangle.

27 - 10 bushes - Howard Wilson $\frac{1}{2}$ mile from Highway #62 on Little Brushy Mountain Road - (R_{21}) - Briceville Quadrangles.

28 - 1 bush - Melton Sexton - two miles from Highway #62 on Little Brushy Mountain Road - (R_{19}) - Briceville Quadrangle.

29 - 3 bushes - George Lephord - One mile from Petros Road on Highway #62 - R_{28} - Briceville Quadrangle.

30 - 5 bushes - Vance Laymanse - $\frac{1}{2}$ mile from Petros Road on Highway #62 - (R_{30}) - Briceville Quadrangle.

31 - 7 bushes - Dick Woods - $\frac{1}{2}$ mile off Highway #62 on a lane turning off Highway to South near Petros Road - (R_{24}) - Briceville Quadrangle.

32 - 11 bushes - Jim Baker Place - 200 yards from Petros Road on Highway #62 - (R_{33}) - Briceville Quadrangle.

33 - 6 bushes - Albert Goddard - Edge of Coalfield on Highway #62 toward Wartburg - (R_{35}) - Briceville Quadrangle.

34 - 5 bushes - Bill Jackson - Edge of Coalfield on Highway #62 toward Wartburg - (R_{11}) - Briceville Quadrangle.

35 - 20 bushes - Bill May - on edge of Coalfield on Corbin Road - (R_{18}) - Briceville Quadrangle.

36 - 24 bushes - Nim Lyles - On edge of Coalfield on Corbin Road - (R_{36}) - Briceville Quadrangle.

37 - 4 bushes - Jim Braden - Coalfield Coal Company Camp - (R_9) - Briceville Quadrangle.

38 - 1 bush - John Phillips - on Old McGlothin Road leading off Highway #62, about two miles below Coalfield - (R_4) - Briceville Quadrangle.

39 - 2 bushes - Rob Walls - on Old McGlothin Road leading off Highway #62, about 2 miles below Coalfield - (R_7) - Briceville Quadrangle.

40 - Mr. Clinton - one bush - on Deermont Road four miles from Oakdale, Tennessee.

FOLLOWING IS A LIST OF RIBES LOCATIONS WHERE
WILD RIBES HAVE BEEN FOUND:-

---

1 - Ribes Cynosbati, $\frac{1}{4}$ mile up Daddy's Creek from Obed River on S. Slope. R_8 - Wartburg Quadrangle.

2 - R. Cynosbati - $\frac{3}{4}$ mile up Obed R. from Daddy's Creek, on N. Slope - R_7 - Wartburg Quadrangle.

3 - R. Cynosbati - $\frac{1}{4}$ mile up Obed R. from Mill Branch, N. E. Slope - R_5, - Wartburg Quadrangle.

4 - R. Cynosbati, $\frac{1}{4}$ mile South of home of Husse Potter near mouth of Daddy's Creek - R_6 - Wartburg Quadrangle.

5 - R. Cynosbati - $\frac{1}{2}$ mile from Obed R. on road back to Wartburg and which crosses Obed near mouth of Daddy's Creek - R_9 - Wartburg Quadrangle.

CULTIVATED RIBES WERE FOUND IN GARDENS, AND IN
ONLY ONE INSTANCE, FOUND ON AN ABANDONED HOME
SITE.

Wild Ribes were found growing in abundance on Daddy's Creek and Obed River. However, in every case where wild Ribes were found (R. Cynosbati ---- only wild species discovered), four conditions were found to be present also; namely, rich soil, shade (more or less dense), plenty of moisture, and rocks or bolders.

Plants usually found associated with the cynosbati were moss, ferns, and laurel.

-- LOCAL INFECTIONS --

During this period of scouting it was found that the distribution of the White Pine Aphid (Lachnus strobi) was very limited. Only one pine stand notably attached.

The White Pine Weevil (Pissodes Strobi) was found generally throughout the county, especially on very young pine trees growing in more or less open spaces, but not in any great numbers.

Very old White Pine timber growing in the vicinity of the junction of Clear Creek and Obed River was found to be seriously infected with the Trametes pini, commonly known as "Red Hoss", "Heart Rot", or "Toad-stoll".

The initial Blister Rust Control survey in Morgan County for the period May 15th to September 30th, 1934, cost $1,533.15. Agents Moss and Jones helped to complete the county and this figure includes their salary, expenses and payroll of the scouts which they used. Included in this cost were the salaries of three B. R. Agents and four Scouts through September 30, 1934.

Submitted by:

Agent - Pete Stegall

Assisted by - Tom B. W. Watkins

District Forester, Harriman, Tenn.

Guy Jones, Dep. Fire Warden, Coalfield, Tennessee.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL IN PICKETT COUNTY

Previously to September, 1934, no Blister Rust Control work had been carried on in this county. Logging industries in this section of the state have cut practically all of the white pine. Fire has burned over much of the territory with the result that nothing but hardwood sprouts are coming in. There is no white pine reseeding.

Virgin white pine is scattered over the entire extreme eastern part of the county. (Scouting of this county being limited up to date to that part of the county lying south and east of the Pickett C.C.C. Camp). 125 Acres of pine running over five per cent has been located and scouted in the immediate vicinity of the Dirt Rock House Tower. This tract is just half of the pine stand -- the other half lying in Fentress County.

No U. S. G. S. quadrangle has as yet been made for this territory.

The agent was assisted by Scout Dester Tompson, who lives near Leatherwood Ford in Scott County. He began work on September sixth.

There was only one pine area located that is of any importance from the blister rust point of view. That stand lies immediately to the Northwest and Southwest from the Dirt Rock House Tower.

Elevation of this county is approximately 1,400 - 1,500 feet ----- accurate calculation impossible to secure as no quadrangle has been made.

No Ribes, cultivated or wild, have been found in Pickett County up to date.

Work in this county amounted to $28.77 including salary and expenses of Agent and salary of one scout.

Submitted by:

Pete Stegall
Agent 10/11/34

Assisted by:

Dist. For. Tom B. W. Watkins
Harriman, Tenn.
Dist. Fire Warden Dester Tompson, Scout.
Gernt, Tenn.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL IN

POLK COUNTY

******

Work was begun in Polk County on September 17th, and completed September 29th.

There is little to say relative to the survey conducted in Polk County for several reasons. At least two-thirds of the county is owned by the Government in the Cherokee National Forest and was scouted for the Blister Rust by a National Forest Checker. The other third has scarcely any white pines, only 77 actual acres were located. For a radius of 20 - 25 miles in the Ducktown section there are no white pines and very few other trees because of fumes from the smelting plant. White pines seemed to be the most sensitive of all trees to the fumes released from the smelting of copper ore. The two quadrangles used in working this county were the Murphy and Cleveland. The most promising creeks for future stands of white pine are Towee, Childers, and Spring. No Ribes nor infectious diseases were noticed.

Figures as to acreage and cost are as follows:

Actual Acres	Actual Plus 900 Feet	Scattered
77	502	100

Cost for working county was $161.67.

Figures as to elevation sites are as follows:

Maximum Elevation ..... 1,500 '.
Optimum " ..... 1,000 - 1,100'.
Minimum " ..... 900'.

Personnel used in conducting the above work is as follows:

L. H. Roberson, McFarland, Tennessee.
Rufus Hall, Conasauga, Tennessee.
Hayden Hall, Archville, Tennessee.
Victor Morel, Reliance, Tennessee.
C. F. Casteel, Copper Hill, Tennessee.

Submitted by:

Agent Troy Jones,
Asst. by the above workers.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN RHEA COUNTY

The white pine Blister Rust Control program in Tennessee is concerned with the protection of white pine, native, planted, nurseries, commercial stand of sufficient value to justify the cost of protection. So far as is known no previous control work has been done in Rhea County.

I was assisted by three scouts in completing this county. Each working during the working period necessary to complete his district. R. F. Green, Brayton, Tennessee, Luther Brown, Evensville, Tennessee, Route #2, and J. W. Pugh, Grandview, Tennessee, were the three scouts employed. Work began July 19, 1934, and was completed August 24, 1934.

Cost and acreage figures are as follows:

Cost of working county	$461.21
Actual Pine Acreage	967
Scattered Pine Acreage	1920

Crew work in this county began July 14, 1934, and was completed in two days using a seven man crew.

The crew personnel was as follows:

John Roberson	(Foreman)	)
Melvin Turner	(Laborer)	)
Herman Turner	"	)
Frank Crawford	"	) Pikeville, Tennessee.
G. C. Teeters	"	)
Andy Wedel	"	)
Bob Sapp	"	)

The best pine sites occurred in the Eastern part of Rhea County, growing almost exclusively along the streams, coves and gulfs. Seldom did pine of any quantity reach above the slope or elevation of 1,700 feet elevation. Pine seldom occurred in pure stand, but in mixtures of oaks, poplar and hickory and hemlocks.

Elevation Figures are as Follows:

Maximum elevation	1800 feet.
Minimum "	1200 " .
Optimum "	1500 - 1600 feet.

Choice pine areas refer to Kingston Quadrangle and pine area Record Sheet Numbering 1 and 2.

Ribes Conditions:

Three species of Ribes were found in Rhea County --- Ribes Curvatum, Cynosbati and Grossularia. The habitats of both Curvatum and Cynosbati were very irregular. Their elevation varied from 1200 to 1800 feet, and were growing on dry slopes, on side of gulfs, moist hollows, on top of large rocks, in loose ledges of rocks, old fence rows and under dense undergrowth of briars and bushes. Three areas were eradicated in Rhea County.

The best pine areas are plotted and recorded on the Pikeville Quadrangle No. 1 and 3 and on the Kingston Quadrangle No. 1 and 2.

Ribes Grossularia was found around many mountain homes, but were left unpulled at present in accordance with the present Ribes policy in Tennessee. No infection was found on any pine or Ribes, although both cultivated and wild Ribes were found in the infective zone.

Diseases and infections observed while scouting:

White Pine Borer
Chestnut Blight
Fomes Pini
Dogwood Blight

Records:

Through the information of District Foresters, Fire wardens (As Scouts) and lumbermen of Rhea County; the white pine was located, scouted for Ribes and rust and acreage measured by pacing dimensions of each area. All pine of over five per cent stands and acreage above ten acres were recorded on pine area record sheets and indicated on U. S. Quadrangle Sheets in green coloring. The Ribes were shown in red dots and numbers as: Wild - R_1, Cultivated (R_1), et cetera.

Recommendations:

This county was scouted rather thoroughly, but Ribes are numerous and the eradication done was under difficult conditions. Therefore, I think this area should be worked within two years.

Submitted by:

A. H. Moss, Agent.

Assisted by:

John Tyler, Dist. Forester, Custom House,
Luther Brown (Chattanooga, Tenn.)
J. W. Pugh

SUMMARIZATION OF RIBES CONDITIONS IN RHEA COUNTY

Species	Locations & Owner	No. Bushes	Pulled	Unpulled
Curvatum	Kingston Quad - R_1 Piney Creek (Wash Pelfry)	12,762	Yes	-
"	Pikeville Quad - R_2 Morgan Springs (Geo. Morgan)	4,280	"	-
R. Cynosbati	Kingston Quad - R_{11} White Creek (Roane Iron Company)	In abundance	-	Yes
R. Grossularia	Kingston Quad - (R_2) Spring City (Howard Lyle)	25	-	"
"	Kingston Quad - (R_3) Grandview (J. W. Pugh)	12	-	"
"	Kingston Quad - (R_4) Grandview (Jess Donalds)	20	-	"
"	Kingston Quad - (R_5) Route #1, Grandview Bill Monday	30	-	"

R_1 Indicates Wild Ribes.

(R_1) Indicates Cultivated Ribes (et cetera).

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN SCOTT COUNTY

September, 1934, the initial White Pine Blister Rust Control survey was made over a portion of the white pine stands of Scott County. Scouting in this county was carried on much as it was in Fentress County. No intensive scouting for Ribes being carried on other than by inquiry of local inhibitants. Specimens were exhibited to people living where investigation was going on, but, except for the location of the cultivated Ribes, no Ribes were found. However, after the initial scouting period had terminated (September 30th) wild Ribes were reported to be growing on Potter Branch near the Fentress County line.

The principal work of the B.R.C. in this county was the location of white pine and the gathering of data on such --- as age, percentage of stand, size, et cetera. White pine in this county has mostly been cut out by logging industries. The remaining pine areas were practically confined to the territory lying north and East of Leatherwood Ford.

Forest scouting in connection with B.R.C. work in Scott County has been carried on only where there are actual pine areas, indicated on maps covering the territory worked.

Cultivated Ribes in Scott County are located on maps only where they occur within 900 feet of pine stands.

Figures as to acreage and cost are as follows:

Actual acreage and cost are as follows:

Cost for portion worked	$122.27
Actual acreage completed	2,902 acres

Figures as to site elevations are:

Minimum	1,000	Figures are only for portion scouted.
Maximum	1,500	

Cultivated Ribes are referred to on the map as follows:

(R_{29}) - Jake Blevins
(R_{30}) - Dester Tompson
(R_{31}) - Daniel Terry
(R_{32}) - F. M. Tompson

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK IN SEVIER COUNTY

Up until the time I entered the field to investigate white pine timber no work had been carried on relative to blister rust exclusive of the National Park. Joe Manley has and is conducting a similar campaign within the park boundary.

Work was begun in this county on Thursday, July 26, and was completed on Monday, August 6th.

Two scouts assisted me in the field, Art long and Arthur Williams, whose addresses are given below.

Figures as to acreage and cost are as follows:

Scattered acreage amounted to 125 for county

Cost of working county was $127.55

A resume of the white pine situation can be stated in one sentence. As much as a ten acre tract of white pines was not found within the county. Scattered trees and occasional patches could be found along stream beds.

Figures as to elevation, site are:

Maximum elevation	.....	1,600 feet
Optimum "	.....	1,350 - 1,400 feet
Minimum "	.....	1,200 feet

No Wild Ribes was found and time was not taken to ask concerning cultivated Ribes since the pine condition did not warrant such.

No disease nor infection was noticed.

I cannot see the value of working this county within the future unless a young growth arises and that seems doubtful.

Submitted by:

Agent - Troy Jones

***

Assisted by:

District Forest Fire Warden-Art Long-Walland, Tenn.

Asst. Dist. Forest Fire Warden-Arthur Williams, Cosby, Tenn.,R#2.

----- o O o -----

W.O.H.
3/11/35

REPORT ON

WHITE PINE BLISTER RUST CONTROL

IN THE UNAKA NATIONAL FOREST, TENNESSEE

CARRIED ON FROM

CAMPS F-5,TENN-UNICOI AND CAMP F-6 TENN - HAMPTON

In 1934

By P.A. Swarthout

SUMMARY OF BLISTER RUST CONTROL WORK AT F-6.

Hampton, Tennessee, August 6 to 23,1934.

I arrived at this camp on August 6, 1934. After conferring with blister rust checker, Robens it was decided that the work from this camp should be confined to the white pine areas on the Stony Creek watershed and the White Rocks Mountain area. Two scouts were trained and started work August 9, 1934.

With the exception of the plantation areas on Laurel Fork, white pine occurs in small scattered stands in this section. The location of pine areas at this camp was simplified due to the fact that timber stand improvement crews had prepared a type map in connection with their work and all white pine stands were shown.

Ribes are found here only at high elevations growing wild. Only one location of tame Ribes was found, these were pulled with the owners consent.

It can be safely said that adequate protection has been established on all areas workable from this camp.

- - - - - - - - - - - - -

Summary of Work

Scouts

Pine area protected - - - - - - - -	284	acres
Area worked - - - - - - - - - - - -	725	"
Man days (CCC) - - - - - - - - - - --	12	"
Ribes pulled - - - - - - - - - - - --	55	(25 tame - 30 wild)

Blister Rust Checker

Pine area protected - - - - - - - -	470	acres (400 plantation)
Area worked - - - - - - - - - - - --	1180	"
Man days - - - - - - - - - - - - - --	4	

Totals

Pine area protected - - - - - - - -	754	acres (400 plantation)
area worked - - - - - - - - - - - - -	1905	"
Ribes pulled - - - - - - - - - - -	55	(25 tame - 30 wild)
Man days - - - - - - - - - - - - -	12	CCC
Supervision - - - - - - - - - - - -	15	

(Signed) PAUL A. SWARTHOUT
Blister Rust Checker.

(TENN. UNAKA NATL. FOREST CONT.)

SUMMARY OF WORK CARRIED ON AT THE UNICOI CAMP F 5 TENN. GIVEN BY P. A. SWARTHOUT IN LETTER OF AUGUST 4, 1934.

Area worked by scouts - 4,440 acres.
Number Ribes pulled - 51 bushes.
Pine area protected - 1,653 acres.
No. C.C. Man days labor - 45
No. supervision man days 29

Work was finished at the Unicoi Camp on Aug. 3, 1934.

Mr. Swarthout was assisted usually by two scouts except in the week ending July 28, when he had four men.

Ribes

Ribes were found by Mr. Swarthout on Unaka Mountain and around Laurel Spring, during the week ending July 21, 1934. No white pine were growing near these locations.

At Tiger Creek - 30 Ribes were pulled during week ending August 11, 1934, by scouts to give them actual experience in eradication, although they were near no valuable white pine stands. Ribes were found near white pine at the following places:

Indian Grave Gap - 51 Rotundifolium were pulled. Other Ribes were located along the ridge one-half mile distant from this area to the southwest, but not pulled.

RGP/woh

No. of Camp	Name of Pine Area	Unit No.	No. of Pine Area	Area in Acres	Total Area Worked	No. Man Days Worked	No. Man Hrs. Wkd.	Ribes Bushes Pulled	Date of Working
Camp F 6 Tenn.	Bowers Branch Area.	Units 50 & 51.	Pine Area C 1.	90 A	220 A.	4	25		Aug. 15, 16, 1934.
Camp F 5 Tenn.	Burnt Ridge Branch.	See Spivey Cr. Watershed	" " A 1.						
Camp F 6 Tenn.	Cedar Gap Area.	Units 36,37 & 38.	" " A 1.	135 A	320 A.	4	26		Aug. 9, 10, 1934.
Camp F 6 Tenn.	Dennis Cove Area.	Units 61 & 62.	" " D 1.	50 A	120 A.	1	8	25 R. vulgare	Aug. 20, 1934.
Camp F 5 Tenn.	Devils Creek Area.		" " C 1.	15 A	Not given				
Camp F 5 Tenn.	Dry Creek Camp, Area Carter County.		" " I 1.	10 A	" "	Not given			
Camp F 5 Tenn.	" " "		" " F 2.	130 A	" "	" "			
Camp F 5 Tenn.	Gap Creek Area.		" " H 1.	65 A					
Camp F 5 Tenn.	Granny Lewis Creek Area.		" " B 1 & 2.	440 A					
Camp F 5 Tenn.	Indian Grave Gap Area.		" " D 1.	30 A				51 R. rotund.	Two weeks ending July 21 and 28, 1934.
Camp F 5 Tenn.	Jones Branch Area.		" " C 2.	35 A					
Camp F 6 Tenn.	Laurel Fork Plantation.		" " F 1.	400 A	1000	2	14		Aug. 17, 21, 1934.
Camp F 5 Tenn.	Laurel Ridge Area (See Spivey Creek Watershed).		" " A 3.						
Camp F 6 Tenn.	Lick Branch Area. Unit 22 C.		" " E 1.	20 A	60	1	7		Aug. 16, 1934.
Camp F 5 Tenn.	Long Branch Area (See Spivey Creek Watershed).		" " A 2.						
Camp F 5 Tenn.	Martin Creek Watershed.		" " E 1.	230 A					Week ending July 21, 1934.
Camp F 5 Tenn.	North Indian Creek Area (See Rocky Branch Map).		" " P 2.	25 A					
Camp F 5 Tenn.	Oldfield Branch Area.		" " G 1.	30 A					
Camp F 5 Tenn.	" " "		" " G 2.	25 A					
Camp F 5 Tenn.	Rocky Branch Area.		" " P 1.	38 A					
Camp F 5 Tenn.	Spivey Creek Watershed (2 sheets)		" " A 1, 2 & 3.	700 A (1)					July 7, 1934.
Camp F 6 Tenn.	Watauga Pine Area. Units 80 & 81.		" " B 1.	35 A	110 A	2	14		Aug. 14, 1934.
Camp F 6 Tenn.	White Rock Area. Unit 8.		" " A 2.	24 A	75 A	2	13		Aug. 13, 1934.
Camp F 5 Tenn.	Wolf Pen Branch Area. (See Dry Creek Area #2 Sheet.)		" " F 1.	40 A					
T O T A L				2567 A				106[3]	

Report by Roy G. Pierce on Blister rust control in the Unaka National Forest, conducted from Camps F 5 & 6 Tennessee from Weekly Summaries and Tracings of Pine Areas by P. A. Swarthout for the period July 1 to August 18, 1934.

Scouting and control work was carried on from two C.C.C. camps, the Unicoi Camp F 5 Tenn. and the Hampton Camp F 6 Tenn. by Mr. Swarthout, the blister rust checker, who had been carrying on similar work on the Pisgah National Forest in North Carolina and Tennessee in 1933 and 1934. The above areas and creeks were worked by Mr. Swarthout and his scouts.

(1) This acreage not given on Swarthout's tracing, but given on his Weekly Summary for July 7, 1934.

(2) " " " " " " " " " " " " " " " 14, 1934.

(3) 30 wild bushes not listed above were pulled on Tiger Creek for experience, though near no valuable pine stock.

RGP/woh

3-12-35

(COPY)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY
WASHINGTON, D.C.

DIVISION OF
PLANT DISEASE ERADICATION AND CONTROL

April 24, 1935.

Mr. R. G. Pierce, Pathologist,
U. S. Dept. of Agriculture,
Blister Rust Control,
Washington, D. C.

Dear Mr. Pierce:

Enclosed herewith is Supplementary Annual Report for Virginia for 1934. The figures in Mr. Francis' tables have been corrected to agree with information just received from him.

Very truly yours,

/SIGNED/ J. G. LUCE, Jr.

J. G. Luce, Jr.,
State Leader-Virginia
Blister Rust Control
c/o State Forester
University, Virginia.

/copy/

woh

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INTRODUCTION

Due to the continuance of Ribes eradication after October first, at which date the Annual Report for Virginia of Blister Rust Control for 1934 was filed, this supplementary report is compiled to cover the period from October through December.

A number of tables not available for the former report are in this supplement, including tables that show the details of the work done on the National Forests and National Park in Virginia.

The State Leader wishes to express for the entire Blister Rust personnel their appreciation of the generous assistance and hearty cooperationof the State Entomologist, the State Forester and all members of the Virginia Forest Service, the U. S. Forest Service, the U. S. Park Service, and those private individuals who have sacrificed their cultivated gooseberries and currants in the furtherance of our work.

EXCERPT FROM

REPORT TO THE CHIEF FORESTER

on

WHITE PINE BLISTER RUST CONTROL

Shenandoah National Park

January 1 - December 31, 1935

by

Edwin H. Francis, Assistant Forester

White Pine Blister Rust Control

Shenandoah National Park

Virginia

History of White Pine Blister Rust in Shenandoah National Park

Until the fall of 1931 when L. W. Hodgkins and C. T. Geiser found the blister rust on some Ribes rotundifolium in Thornton Gap, no attention or study was particularly paid to the occurrence of white pine blister rust in the Blue Ridge Range. From September 19th to September 24th 1932, Mr. Roy G. Pierce, of the Department of Agriculture and Mr. C. R. Wiley, of the Virginia Department of Agriculture, made survey of the occurrence of white pine along the western face of the Blue Ridge Mountains from Front Royal to Luray. No blister rust on either the white pine or Ribes Rotundifolium was noted. The disease was however located on some cultivated currants growing in the L. N. Bryan's Nursery about two miles east of Luray on the Lee Highway.

On June 3, 1933 protection and survey of the most important stands of white pine occurring along the Skyline Drive between Thornton Gap and Big Meadows was started. During the summer several occurrences of white pine blister rust were located on both white pine and Ribes rotundifolium in the Hawksbill Mountain, Skyland Resort, and Sexton Shelter areas. In the spring and summer of 1934 further infections were found in the above areas and in the Black Rock Area. Two trees in the above areas were so badly infected that they had to be cut down.

Recently other infected trees have been located; two young trees around eight feet tall were yellowing and dying in Elk Wallow Gap, and several young pine (4-8 Ft. tall) were found infected and cankered in Tutwiler Hollow just outside Park. (See "Eradication and infection Area Maps" and "White Pine Blister Rust infection Area Chart").

Policy Used in Protecting White Pine in Park

The white pine areas warranting protection should have recreational and aesthetic value by virtue of location in close proximity to Skyline Drive, trails, proposed developments, secondary roads which to Skyline Drive and strategic points, will act as "feeders". The amount of white pine necessary for protection should depend upon its inherent value and its prominence in location. For ordinary pine areas and average of twenty trees per acre should be adhered to.

Preliminary Estimates and Survey for Eradication Program 1934.

A survey of the remaining white pine in the Central section was made in the early spring of 1934 and the following areas were decided upon as justifying protection from the white pine blister rust; Thornton Gap Watershed, Hawks Bill extension area. Spitler's pine area (No. 85), and the Long Ridge areas (Nos. 80, 82 85). These areas totaled 3142 acres of white pine and 8600 acres of protection acreage to be eradicated of Ribes rotundifolium. It was further estimated that 11,200 man-days of C.C.C. labor would be needed to complete the above work.

The survey and mapping of above white pine areas cost $117.25 of which $35.50 was for the assistant mapper at $1.00 per day.

A report on the occurrence of white pine in the southern section of the Park was made on May 29, 1934, in which certain areas were recommended for protection. (Of those recommended, only the Big Flat Mountain area containing 10 acres of white pine was protected in 1934), (See Table No. 4).

Eradication Work For Season 1934

The eradication of gooseberry bushes (Ribes rotundifolium) started about May 15th and continued through October 19th, 1934. 6899 acres (field estimate) were eradicated of 579,669 Ribes bushes by the use of 6,371 C.C.C. man-days. (See Table Nos. 1, 2, 3).

Eighty-three (83) acres were "re-eradicated" this year of 25,525 bushes with 82 man-days. (The large Ribes occurrence was due to one acre in Sexton Shelter on which about 10,000 second growth sprouts and seedling's occurred and to two acres of original eradication on Hawks Bill Mountain which were included by an oversight with the "re-eradication" notes).

Recommendations For Re-eradication Spring 1935

Thornton Gap: Most of this area was eradicated by the crew-scout method. The area around Mary's Rock was eradicated by the crew method. Only the immediate territory on each side of Thornton Gap and perhaps Mary's Rock will need scouting in the early spring of 1935.

Sexton Shelter: "Re-eradication" of about five acres was carried on. However, more scouting on the western face of Sexton's Knoll picnic area below the horseback trail will be needed in the early spring of 1935.

Skyland Resort: Probably no work will be needed in this area next year.

Hawks Bill Mountain: Several areas eradicated late this fall will need checking over in early spring, in order to be sure that as full protection as possible is being given this area.

Black Rock: This area was eradicated during the summer of 1934. It was very difficult to get the crew to do clean work in this area; their chief trouble was leaving crowns in the ground which could not be detected until a month or so later.

It is recommended that the open field west of Big Meadows be checked over by scout method in the early spring of 1935.

Big Flat Mountain: This area will not need attention for 2-3 years.

Cooperative Visits Made by Bureau of Entomology and Plant Quarantine

Mr. D. H. Fitzwater, Administrative Checker for the Bureau of Entomology and Plant Quarantine, visited the Park July 18 - 23, 1934 and aided materially in the official checking of various blister rust control projects.

Mr. Roy G. Pierce, Associate Pathologist of the Bureau of Entomology and Plant Quarantine, made an official inspection September 20-21, 1934. Many helpful recommendations were made at this time. More detailed information can be obtained from his report of September 27, 1934 which is as follows:

"As you know from personal observation and conversation, Mr. E. H. Francis and I spent two days last week, September 20th and 21st, inspecting the gooseberry elimination work going on in the Shenandoah Park area. You will be interested in learning some of the details and results of our inspection. I will list them by areas:

1. Spitlers Pine. 1¾ miles south of Camp 2, west of Skyline Drive.

This area was inspected by Francis, Withers and myself on August 24th, as I informed you the same day, and found to have a considerable number of missed bushes in the upper portion of the area. Mr. Francis reworked this area prior to September 20th. On our present inspection, only one small area among the rocks was found with Ribes ----- eight missed bushes being found in this rock drift. Mr. Francis will have this rock drift worked by one scout. No bushes were found at any other place in the area which indicated quite satisfactory work.

2. Bear Wallow Springs Area. About three miles south of Camp 2, along the Drive.

This area had a heavy Ribes population prior to working, particularly in an old pasture east of the road. We scouted parts of this area very carefully, but found no Ribes.

3. Black Rock Area.

A. We checked the work being done by Foreman Cave, both above and below the trail near Monkey Head. We found where numerous Ribes had been removed, most of them being hung up properly. However, four bushes just recently pulled were found lying on the ground, with leaves still green, and one of these bushes had numerous infected leaves. The foreman was cautioned concerning the necessity for careful disposal of the bushes. No living bushes were found which had not been pulled.

B. In the narrow neck between Monkey Head and Black Rock east of the bridle trail, we found numerous crown sprouts and a few missed bushes small in size along the trail. Original eradicative work had been done by Mr. Adams and found unsatisfactory. Mr. Francis plans to rework the area in the early spring of 1935 with scouts.

4. Lewis Spring Area.

This area was found by Messrs. Fitzwater and Francis to be poorly worked earlier in the summer. It was, therefore, reworked by Mr. Bailey. No bushes were found on the check by Mr. Francis or myself.

5. Thornton Gap Area.

A. South of the Lee Highway and around Mary's Rock, west of Skyline

Drive. Examination showed that many Ribes bushes had been pulled by the crew. The crowns were well hung up. We found, however, ten missed bushes of medium height of the woods. The work on the area as a whole was good, but it is suggested that one man rework the area for missed bushes as soon as possible, due to its exposed situation in the gap.

East of Skyline Drive at Thorntons Gap.

B. The Ribes bushes had been numerous in this area, which had been worked by a crew. Six missed bushes were found on two acres in our check, two of these showing heavy grazing by cattle. This indicates possibly that there are other bushes present, which will 'show up' when the grazing ceases. It is suggested that one or two scouts rework the area early in the spring.

6. Skyland.

We found one eight-foot pine with many infected branches within fifty feet of the drive. All visible infections were removed. Only one lot, Ribes bush 30 inches in height, was located. The area checked showed good work had been done by the crew.

7. Hawksbill - Spitler Hill.

A few Ribes bushes were found on the area checked and since the bushes in 1933 ran 1,000 to the acre here, very likely additional ones are present on the area. One small infected pine 15 feet in height was found with blister rust canker running into the trunk. The trunk canker will be carved out by Mr. Francis in order to save the tree. This area should be scouted in the spring of 1935.

8. Sexton Shelter.

This was worked in 1933. On one area of about an acre west of the Drive formerly in sumac and Ribes, where the bushes ran 5,000 to the acre, numerous Ribes seedlings were found three to ten inches in height, together with a number of old bushes which had been missed. Other parts of the Sexton Shelter area were scouted, but the bushes found were only occasional. It was suggested that the portion where the Ribes were concentrated, be reworked at once, but where the bushes were few in number, that scouting for them be delayed until the early spring of 1935.

I believe that the system that Mr. Francis had inaugurated of having a checker, Mr. Campbell, check every eradication area, has worked out very well, because it has enabled the areas which were not satisfactorily worked to be found at once and this made it possible to rework them the same season."

Organization of Eradication Work, 1934. The usual crew-strip method with five to six men in line with a crew leader following was used. In addition, this year an added position of checker was added to aid the foreman in charge of the project to keep check on the bushes missed by taking both formal (1/16 acre check plot) and informal checks immediately behind the crews.

Reports were sent in weekly on the "Weekly Report Form" to the Park Superintendent's office by the various E.C.W. Project Superintendent. This system worked very effectively.

To assist the official checker (Assistant Forester) and an administrative checker (N.P.S. Foreman) with two assistants was introduced on August first in order to cope with the large amount of checking necessary on the various projects. This system of an administrative checker increased the efficiency of the crews immensely and aided the Assistant Forester in keeping a more thorough check over the entire blister rust eradication program.

Forms and Methods Developed To Aid Work

The "Weekly Report Form" was made to assist in coping with the large amount of statistical information required by the Bureau of Plant Disease Control which is cooperating in the white pine blister rust control in the Shenandoah National Park. (SEE EXHIBIT A)

For the administrative checking, it was found advisable to keep the results in a cardboard covered notebook (3 x 5 inches). On the right side, the check plots with the pertinent data were listed and for each subsequent area, a small scale sketch-map of the particular section of the project being checked was made. On this map, each check plot was located by number in the numerator and the number of bushes missed was placed in the denominator in red crayon.

Proposed Program 1935.

It is proposed that a master control plan for the Shenandoah National Park be worked out with the data that is now available giving the estimated initial eradication cost for any further justifiable projects and the probable cost in man-days for maintenance for a five-year program.

Sanitation Work. It is recommended that in the protected areas and in the proposed eradication areas for 1935 (probably Elk Wallow Gap, Dicheys Hill, Beahm's Gap and Pass Mountain will be proposed for eradication soon) that sanitation work be carried on in order to prevent as far as possible any spread of the blister rust.

Revision of Present Policy.

Since a good many thrifty white pine stands just within the boundary of the Shenandoah National Park occur, and since the State of Virginia has protected the best stands occurring just outside the Park boundary, it is recommended that the present policy be expanded to include some of the best of these white pine stands. In several cases these pine areas will cost very little to protect and will be an asset in future years to the Park.

White Pine Occurrence Mapping

About 10,000 acres of the Park Land remains to be scouted for white pine. The areas to be scouted lie around Piney River in the north section of the Park and Marmon's River in the south section. It is hoped the field work can be completed during the first part of January.

Office maps showing the occurrence of white pine along with the coded classification have been finished for the south section. The central section needs a few revisions, and the north section remains still to be finished . When completed these maps (made on U.S.G.S. Advanced Sheets, scale 1/24000) will be bound into an atlas along with the narrative notes.

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TABLE #3 - SUMMARY OF WEEKLY RECORD SHEETS BY AREAS
SHENANDOAH NATIONAL PARK
May - October 1934.

PINE AREA	SCOUTS			CREWS			CHECKER PLOTS			Informal Checks By Foremen	CREW CHECKS	
	Number Scouts	Acres Cleared	Ribes Pulled	Number Crew Men	Acres Cleared	Ribes Pulled	Number Checkers	Plots Made	Bushes Found		No. of Bushes	Acres Checked
1. Black Rock	17	56	1948	2180	1974	233537	249	296	723	5868	28358	757½
2. Thornton Gap	255	958	3916	1179	1797	50849	129	10	22	2278	1323	73
3. Hawksbill Mountain	11	15½	546	815	850½	130825	138	470	825	3112	1989	217-5/8
4. Bear Wallow Springs	25	91	2282	468	326	42533	38	76	117	468	377	260
5. Flat Top Mountain					163	4380						
6. Area # 85	8	14	184	70	117	114456	14	39	71	526	1164	164
7. Area # 80 - 82	4	8	120	211	216	29972	24	53	58	476	707	190
8. Area # 81	132	154	1648	168	126	11281	18	30	10	176	674	57
TOTAL INITIAL ERADICATION	452	1296½	10644	5091	5569½	617833	610	974	1826	12904	34592	1719-1/8
1. Hawksbill				56	77	13939	5		17	80		
2. Sexton Shelter	4	2-3/5	392	17	3.2	11194						
TOTAL ERADICATION	4	2-3/5	392	73	80.2	25133	5		17	80		
Administrative Checker								554	1307	563		
TOTAL	456	1299-1/10	11036	5164	5649.2	642966	615	1528	3150	13547	34592	1719-1/8
Bushes pulled by Scouts & Crews			3133 13467			34592						
GRAND TOTAL	456	1299-1/10	27636	5164	5649.2	677558	615	1528	3150	13547	34592	1719-1/8

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TABLE 5 - RESULTS OF PRE-ERADICATION SURVEY
WHITE PINE AREAS, 1934 - E.C.W. WORK
SHENANDOAH NATIONAL PARK

NAME OF PROJECT	Name of Camps Working on Project	Acres of White Pine to be Protected	Acres to Work			Estimated Man Days Work Required			Man Days Used			COSTS		
			Crew	Scout	Total	Crew	Scout	Total	Asst.	Mapper	Total	Asst.	Mapper	TOTAL
Thornton Gap Pine Area	S. N. P. # 1	1,826	2,814	2,519	5,333		2,800	2,800	17	17	34	$17.00	$51.00	$ 68.00
Hawksbill Pine Area	S. N. P. # 1 S. N. P. # 2	363	588		588	5,600		5,600	2	2	4	2.00	6.00	8.00
Black Rock Area	S. N. P. # 2	600	1,206		1,206				4	4	8	4.00	12.00	16.00
Bear Wallow Springs	S. N. P. #3	315		1,544	1,544				2½	1½	4	2.50	4.50	7.00
Spitler's # 85	S. N. P. #3	5							1		1	1.00		1.00
#80 & 82	S. N. P. #3	25					2,800	2,800	2	½	2½	2.00	1.50	3.50
#81	S. N. P. #3	8							1	½	1½	1.00	.75	1.75
Big Flat Mountain Area	S. N. P. #5								6	2	8	6.00	6.00	12.00
TOTAL		3,142	4,608	4,603	8,671	5,600	5,600	11,200	35½	27½	63	35.50	81.75	117.25

Note: The cost of C.C.C. man days was figured at $1.00.

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WHITE PINE BLISTER RUST INFECTION AREA CHART

SHENANDOAH NATIONAL PARK

VIRGINIA

Name of Area	On White Pine or Ribes or Both & Kind	Extent of Infection	Damage Observed	Elevation	By Whom Found	Date of Discovery	Location (County, Mtn., etc.)	Age of Disease
Black Rock (Central Section)	R. rotundifolium	Not known	Local area	3660	Roy G. Pierce	September 20,1934	Monkey Head Mtn. (Page Co.)	Summer, 1934
	P. strobus	Not very large	One tree badly infected	3500	E. H. Francis	May 15, 1934	Black Rock Swamp (Madison Co.)	Four years
Hawksbill Mountain	R. rotundifolium	Hawksbill & Haywood Mtn.	Scattered around S.E.Slope Hawksbill Mtn.	3500	Roy G. Pierce	Aug. 14, 1934	Maywood Mtn. (Madison Co.)	Summer, 1933
	P. strobus	Infection found in vicinity of Skyline Dr. between above.	One tree dead. Several trees with cankers.	3600	E. H. Francis E. H. Francis	Aug. 3, 1933 May 11, 1934	Hawksbill Mountain (Madison County)	7 years (?)
Skyland	P. strobus	Probably small	One tree 6 - 8 years old infected	3600	R. G. Pierce	September 20,1934	Page County	(?)
Sexton Shelter	R. rotundifolium	Small as far as could be ascertained	Small local infection area	3200	Foreman - S.M.P. Camp #2	September, 1933 (?)	Sexton Shelter (Madison Co.)	Summer, 1933
Thornton Gap	R. rotundifolium	Small local area	Small	2400	L. W. Hodgins C. T. Geiser	Summer, 1931	(Madison County)	Summer, 1931
Tutwiler Hollow	P. strobus	Several young W. Pine in open field were infected	Terminal, lateral of main trunks cankered	1500	E. H. Francis	November, 1934	Tutwiler Hollow Page County	3 - 4 years (?)
Elkwallow Gap	P. strobus	Not known	Two W. Pine (8 Ft.) were yellow	2500	E. H. Francis	Dec. 4, 1934	Elkwallow Gap, Page & Rappahannock Counties	5 - 7 years (?)

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DETAILED SUMMARY OF PINE LOCATION & PRE-ERADICATION SURVEY ON GEORGE WASHINGTON NATIONAL FOREST

1934

Dry River Working Circle, North River Drainage

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NAME	Area No.	No. Plots	Total Stems	Pine Stems	Percent Pine	Pine Stems per Acre	Form	Acres Pine	Control Area	Age-Class	Ribes Status	Infection Status	Stand Comp. Reference
Shifflette Place to First Ford above Camp Todd	4	40	780	197	25.5	120 - 400	Good	320	740	3-60	General	3 located present	T.S.I. report x map of Area 21.
First Ford above Camp Todd to Puffenbarger fields	27	36	550	35	4	33	Fair	150	736	3-70	"	40 located	Ditto
Skidmore	8	41	744	95	12.6	101	Good	130	430	4-35	"	11 " present	T.S.I. report x map of Area 19 x 20
Broad Run	9	14	200	28	14.2	100	Fair	97	952	5-55	Very few	None located	T.S.I.rpt.x map A. 22
Cole "	16	13	170	10	5	40	Poor	20	288	6-75	Scattered	" "	" " " " " " " 18
Foley Place to dam	2	14	100	30	16.6	110	Good	140	900	4-60	Very few	" "	" " " " " " " 21
White Oak Run	7	27	380	80	22	150 - 600	Excel.	285	497	4-60	None found	" "	" " " " " " " 24
Little River-Below Mi. Post 5	12	13	190	90	48	350	Good	180	512	10-60	General	" "	Exception Area.
Little River-To Forks	13	11	117	28	25	125	"	178	455	10-60	Heavy	" "	T.S.I.map x rpt.A. 16
Little River-So. Fork	14	21	220	35	17	75	Fair	60	408	8-75	Scattered	" "	" " " " " " 16
Little River-No. Fork	15	11	127	21	20	98	"	90	640	8-60	Spotty	" "	" " " " " " 16
Hog Run					Insufficient pine - discontinued as control area								" " " " " " 17
Hone Quarry-To Pub. Camp	20	19	236	18	8-1/3	70	Fair	50	280	10-55	Scattered	Present	" " " " " " 14
Hone Quarry Camp Gr. to Cattle Camp	21	10	400	24	6	105	"	30	256	8-55	Heavy - 1	Located	" " " " " " 14
Puffenbarger Fields	6				Insufficient pine - discontinued as control area						Spotty	None located	
Dam to Shifflette Fields	3		210	55	25	157	Fair	410	775	5-70	Light	" "	" " " " " " 21
Big Run - above Tillman Run	17	14	165	35	21	125	"	83	324	5-65	On cliffs light	" "	" " " " " " 15
Briery Branch	11	21	256	7	2.7	17	"	161	-	8-60	-	" "	Discontinued.
Tillman Cabin Run	11A	15	155	10	6.5	36	"	87	403	6-50	-	" "	Exception.
Hone Quarry Camp Grounds to Cattle Camp No. of stream	22	40	150	15	10	95	Good	15	-	5-50	Scattered	" "	T.S.I.report x map Area 14
Hone Quarry-Curlin Hollow	23	6	60	2	3	82	Fair	Discontinued		10-35	"	" "	Ditto
" " Main "	24	11	130	5	4	100	"	"		10-20	"	" "	Do.
" " Hawes "	25	4	60	2	4	-	"	"		10-40	"	" "	"
" " - Jno. Curry Hollow	26	2	42	1	2	-	"	"		30	"	" "	"
Flat Run	10	21	350	50	17	116	"	53	304	5-60	Light	" "	T.S.I.rpt.x map A. 23

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DETAILED SUMMARY OF ERADICATION - 1934.

NAME	Number	CREW Acres	CREW Ribes	SCOUT Acres	SCOUT Ribes	Man Sup.	Days Labor	Ribes per Acre	Transp.	Sup. Cost	Cost per A Crew	Cost per A Scout	Total Acres	Total M.D.	Total Ribes	Total Cost	Average Cost per A	REMARKS
Flat Run	10	0	0	204	0	1	2	0	$ .70	$4.73	.0	.043	204	3	0	9.43	.046	
Skidmore	8	230	1718	200	81	4	62	4.2	2.10	18.82	.48	.054	430	56	1799	145.02	.337	
Broad Run	9	70	36	60	0	0	14	.27	0	0	.44	.033	130	14	36	28.00	.22	
Cole Run	16	260	668	200	16	7	73	1.4	5.46	33.11	.530	.02	460	80	684	184.57	.41	
Foley Place to Dam	2	0	0	952	0	2	5	0	0	9.46	.0	.012	952	7	0	19.46	.012	
Dam to Shifflette Fields	3	0	0	204	0	2	6	0	.70	9.46	.0	.028	204	8	0	22.16	.106	
White Oak Run	7	0	0	342	2	1	2	.006	.70	4.73	.0	.025	342	3	2	9.43	.027	
LITTLE RIVER																		
Below Mile Post 5	12	Exception - Worked by State Crew				-	-	-	-	-	-	-	-	-	-	-	-	
To Forks	13	447	4941	0	0	4	137	.11	17.15	18.92	.61	0	447	141	4941	310.07	.69	
South Fork	14	60	123	350	27	2	15	.3	2.80	9.46	.20	.017	410	17	150	42.26	.103	
North Fork	15	640	3829	0	0	5	151	5.9	7.15	23.65	.393	0	640	156	3829	332.80	.52	
Big Run	17	110	117	0	0	0	28	1.06	4.20	0	.50	0	110	28	117	60.20	.54	
Hog Run	18	Discontinued		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Michael Hollow	19		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Puffenberger Fields	6		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HONE QUARRY																		
To Public Camp	20	240	1813	0	0	5	73	7.5	11.20	23.65	.733	-	240	78	1813	180.85	.765	
Public Camp to Cattle Camp North of Stream	22	90	4365	0	0	3	45	48.5	8.40	14.19	.95	-	90	48	4365	112.59	1.26	
Public Camp to Cattle Campsouth of Stream	21	256	790	0	0	3	43	3.08	11.20	14.19	.421	-	256	46	790	111.39	.441	
Curlin Hollow	23	Discontinued		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hawes Hollow	25		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Main "	24		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
John Curry Hollow	26		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BRIERY BRANCH																		
Above Tillman Road	11		"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tillman Cabin Run	11 A	Exception - State Crew		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Virginia Totals by Areas		2403	18400	2512	126	39	656	3.7	71.76	184.47	.266	.036	4915	695	18526	1644.11	.334	Actual Eradication Cost
VIRGINIA TOTALS (All Costs)		2403	18400	2512	126	59.3	656	3.7	71.76	280.52	.266	.036	4915	715.3	18526	1740.16	.354	Control Cost

Labor cost computed at $2.00 per day.
Difference from added total is cost of trail twine.
Includes Sundays, holidays, leave, pine surveys and examining discontinued areas and records.

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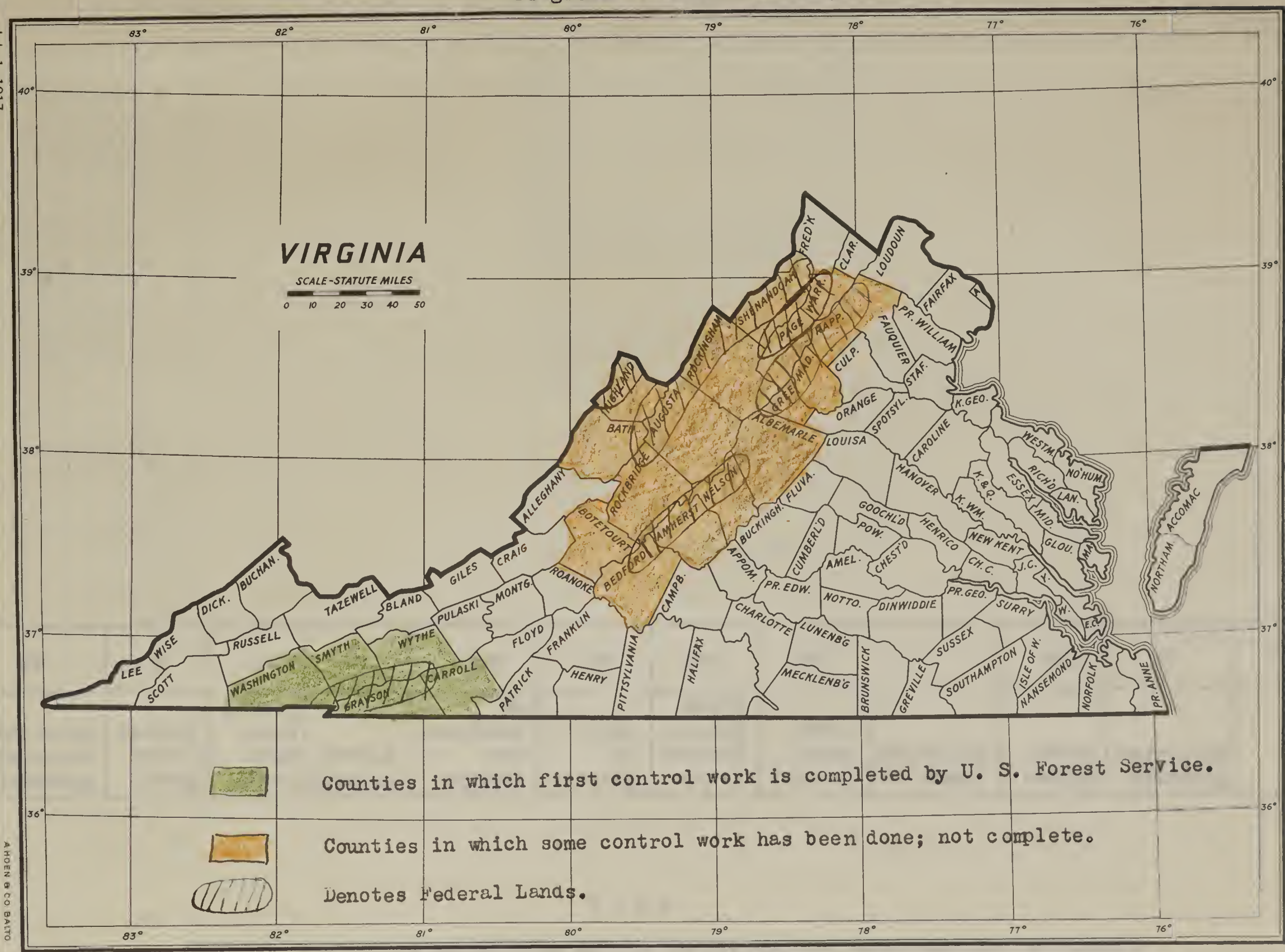
BLISTER RU CONTROL ON FEDER LANDS
Progress of work to January 1, 1935.



July 1, 1917

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SUMMARY OF INFORMATIONAL AND SERVICE ACTIVITIES IN SOUTHERN APPLACHIAN DISTRICT

1 9 3 4

STATE	Meetings Addressed	Attendance	Items Published	Initial Interviews	Publications Distributed	Follow-up Calls	Individuals Instructed	Posters Placed	Demonstrations Placed	Educational Display	Mimeographed Articles Distributed
Virginia	15	854	10	952	229	95	504	72	0	0	47

RESULTS OF PREERADICATION SURVEY OF WHITE PINE AREAS

N. R. A. 1 9 3 4.

October 1, 1934 - December 31, 1934

COUNTY	Number of Projects	Acres of x White Pine Examined	Acres of x White Pine Mapped	Acres to Work			Estimated Man-Days Work Required			Man Days Used			COSTS			Percentage of Preeradication Completed December 31, 1934
				Crew	Scout	Total	Crew	Scout	Total	Agent	Assistant	Total	Agent	Assistant	Total	
Amherst	12	1520								4		4	$45.25		$ 45.25	100
Bedford	4	750								9	4	13	92.12	$11.40	103.52	100
Carroll	31	5145								16½		16½	178.60		178.60	25
Franklin	23	5360								21		21	205.87		205.87	100
Frederick		500								14		14	89.54		89.54	100
Highland	50	3270	1590	270	3000	3270	135	30	165	35	2	37	286.02	7.00	293.02	100
Nelson	9	980								5½		5½	63.30		63.30	100
Rockbridge	2	1116								5	3	8	35.79	8.55	44.34	100
Shenandoah		160								14		14	107.96		107.96	100
Tazewell		3								9		9	53.65		53.65	100
TOTAL	131	18804	1590	270	3000	3270	135	30	165	133	9	142	$1158.10	$26.95	$1185.05	

x Based on following:

Minimum Pine Standard Requirement -

Trees	Under 6'	200 per acre
	6' - 15'	125 " "
	16' - 30'	100 " "
	Over 30'	75 " "

SUMMARY OF RESULTS OF PREERADICATION SURVEY OF WHITE PINE AREAS
1934

Agency	Number of Projects	Acres of White Pine Examined	Acres of White Pine Mapped	Acres to Work			Estimated Man-Days Work Required			Man-Days Used			COSTS			Percentage of Preeradication Completed December 31, 1934
				Crew	Scout	Total	Crew	Scout	Total	Agent	Assistant	Total	Agent	Assistant	Total	
N. R. A.	131	18804	1590	270.0	3000	3270.0	135	30	165	133	9	142	$1158.10	$26.95	$1185.05	
E. C. W.	151	7284		6893.3	25603	32496.3	6485	5739	12224	107.5	155	262.5	148.30	1112.05	1260.35	
TOTAL	282	26088	1590	7163.3	28603	35766.3	6620	5769	12389	240.5	164	404.5	$1306.40	$1139.00	$2445.40	

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LOCAL CONTROL - RESULTS OF RIBES ERADICATION
C. C. C. A. - 1934
VIRGINIA

October 1, 1934 - December 31, 1934

FIRST ERADICATION

County	Number of Projects	Acres of White Pine Protected	Acres Worked By: Crew	Acres Worked By: Scout	Acres Worked By: Total	Ribes Bushes Pulled: Crew Wild	Crew Cult.	Agents & Scouts Wild	Agents & Scouts Cult.	Total Wild	Total Cult.	Total All Ribes	No. Per Acre	Man Days Labor Used: Crew	Man Days Labor Used: Scouts & Agents	Total Man Days	Man Days State Leader Supervision	Laborers
Amherst	7	300		960	960				77		77	77	.08		17	17		
Augusta	20	673	1960	1530	3490	11295	300	200		11495	300	11795	3.40	248½	33	281½		$ 894.80
Bath	2	#	441		441	32595				32595		32595	74.00	106½	11	117½		383.40
Botetourt	8	73		500	500			119	5	119	5	124	.61		19	19		
Clarke	5	29		468	468				150		150	150	.30		5½	5½		
Fauquier	7	31		654	654				320		320	320	.50		17	17		
Highland	11	227		1730	1730			455		455		455	.26		9½	9½		
Loudoun	4	20		357	357				135		135	135	.38		6	6		
Madison	2	200		670	670			1325		1325		1325	1.98		3	3		
Page x				13898	13898													
Rappahannock	5	50		590	590			608	18	608	18	626	1.06		4½	4½		
Rockbridge	25	667		3770	3770			87	20	87	20	107	.03		18½	18½		
Rockingham	9	530	3547	5	3552	13095			23	13095	23	13118	3.70	508	7½	515½		1827.53
Supplies & Equipment																		
State Leader																	73	
Salary & Expense																		
Clerk & Typist																		
Special Projects (Maps, etc.)																		
TOTALS	105	2800	5948	25132	31080	56985	300	2794	748	59779	1048	60827	1.95	863	151½	1014½	73	3105.73
Previously Reported	239	14970	13352	48152	61504	339944	1629	9651	11248	348595	12877	361472	5.88	2422	634	3056	147½	8844.69
GRAND TOTALS	344	17770	19300	73284	92584	396029	1929	12445	11996	408474	13925	422399	4.56	3285	785½	4070½	220½	11950.42

County	COSTS: Supervision: Scouts	Supervision: District Agent	Supervision: Headquarters	Supplies Equipment	Total Cost	Cost Per Acre	Ownership
Amherst	$ 14.25	$ 97.97			$ 112.22	0.12	Private
Augusta	89.00	164.85			1148.65	0.30	"
Bath	92.75				476.15	1.08	"
Botetourt	25.99	85.31			111.30	0.22	"
Clarke		56.52			56.52	0.12	"
Fauquier	41.22	74.05			115.27	0.18	"
Highland	10.67	86.45			97.12	0.06	"
Loudoun	21.82	35.37			57.19	0.16	"
Madison		30.13			30.13	0.05	"
Page x	-	-	-	-	-	-	-
Rappahannock		41.02			41.02	0.07	Private
Rockbridge	17.40	189.35			206.75	0.55	"
Rockingham		166.72			1994.25	0.56	"
Supplies & Equipment				$ 63.73	63.73		"
State Leader							
Salary & Expense			$ 658.66		658.66		Private
Clerk & Typist			157.70		157.70		"
Special Projects (Maps, etc.)		675.12			675.12		-
TOTALS	313.10	1702.86	816.36	63.73	6001.78	0.193	Private
Previously Reported	1767.79	3636.26	1238.03	174.23	15661.00	0.255	Private & Public
GRAND TOTALS	$2080.89	$5339.12	$2054.39	$237.96	$21662.78	$0.234	" " "

Acreage Reported in prior report.

x Less than 5% pine, scouted for Ribes.

Subject to adjustments necessary to bring in agreement with Bureau stems at variance with Virginia Ledger.

woh

SUMMARY OF LOCAL CONTROL IN 1934 BY ALL AGENCIES

Virginia

Agency	Number of Projects	Acres of White Pine Protected	Acres Worked By Crew	Acres Worked By Scout	Acres Worked By Total	Ribes Bushes Pulled: Crew Wild	Crew Cult.	Agents & Scouts Wild	Agents & Scouts Cult.	Total Wild	Total Cult.	Total All Ribes	No. Per Acre	Man Days Labor Used: Crew	Scouts & Agents	Total Man Days	Man Days State Leader Supervision	Laborers
N.R.A.	344	17770	19300	73284	92584	396029	1929	12445	11996	408474	13925	422399	4.56	3285	785⅓	4070½	220⅓	$ 11950.42
E.C.W.	58	5153	8681.5	7361	16042.5	614723	-	31553	-	646276	-	646276	42.9	6311	1441	7752	99	7945.70
TOTAL	402	22923	27981.5	80645	108626.5	1010752	1929	43998	11996	1054750	13925	1068675	9.8	9596	2226⅓	11822⅓	319⅓	$ 19896.12

SUMMARY OF EXPENDITURES FOR BLISTER RUST CONTROL

State Virginia

Calendar Year 1934

Table 1. - Expenditures for General Supervision and District BRC Agent Activities

	Salaries			Expenses			Total
	N. R. A.	State	Total	N. R. A.	State	Total	Salaries & Expenses
General Supervision	1149.92	426.00	1575.92	996.60	193.00	1189.60	2765.52
BRC Agent Act.	4311.86	-	4311.86	3601.12	-	3601.12	7912.98
Total	5461.78	426.00	5887.78	4597.72	193.00	4790.72	10678.50

Table 11. - Expenditures by Programs for Control Projects Other than General Supervision and BRC Agent Activities

			Ribes Eradication				
		Projects	Regular Control Work	Nursery Sanitation	Supervision of Ribes Eradication	Pre-Eradication Survey	Totals
UNIT B ECW Program		State	-	-	-	-	-
	Wages	ECW	7674.40		3686.94	1260.35	12,621.69
		Total	7674.40		3686.94	1260.35	12,621.69
	EXPenses	State	-	-		-	-
		ECW	271.30	(Transportation)	-	-	271.30
	Total	Total	271.30		-	-	271.30
	Total		7945.70		3686.94	1260.35	12,892.99
UNIT C NRA Program	Wages	State	-	54.00	-	-	54.00
		NRA	11930.42	-	-	26.95	11,957.37
		Total	11930.42	54.00	-	26.95	$12,011.37
	Expenses	State	-	-	-	-	-
		NRA	157.96	-	-	-	157.96
		Total	157.96	-	-	-	157.96
	Total		12088.38	54.00	-	26.95	12,169.33
Grand Total			20034.98	54.00	3686.94	1287.30	$25,062.32

Comment on N. R. A. Control and Preeradication Survey work for October, November and December----

After October 1, 1935, the minimum pine height requirements for areas to be mapped and crew worked were raised in Virginia by the Bureau from a 5% standard to double that percentage, as will be apparant by comparing the tables below:-

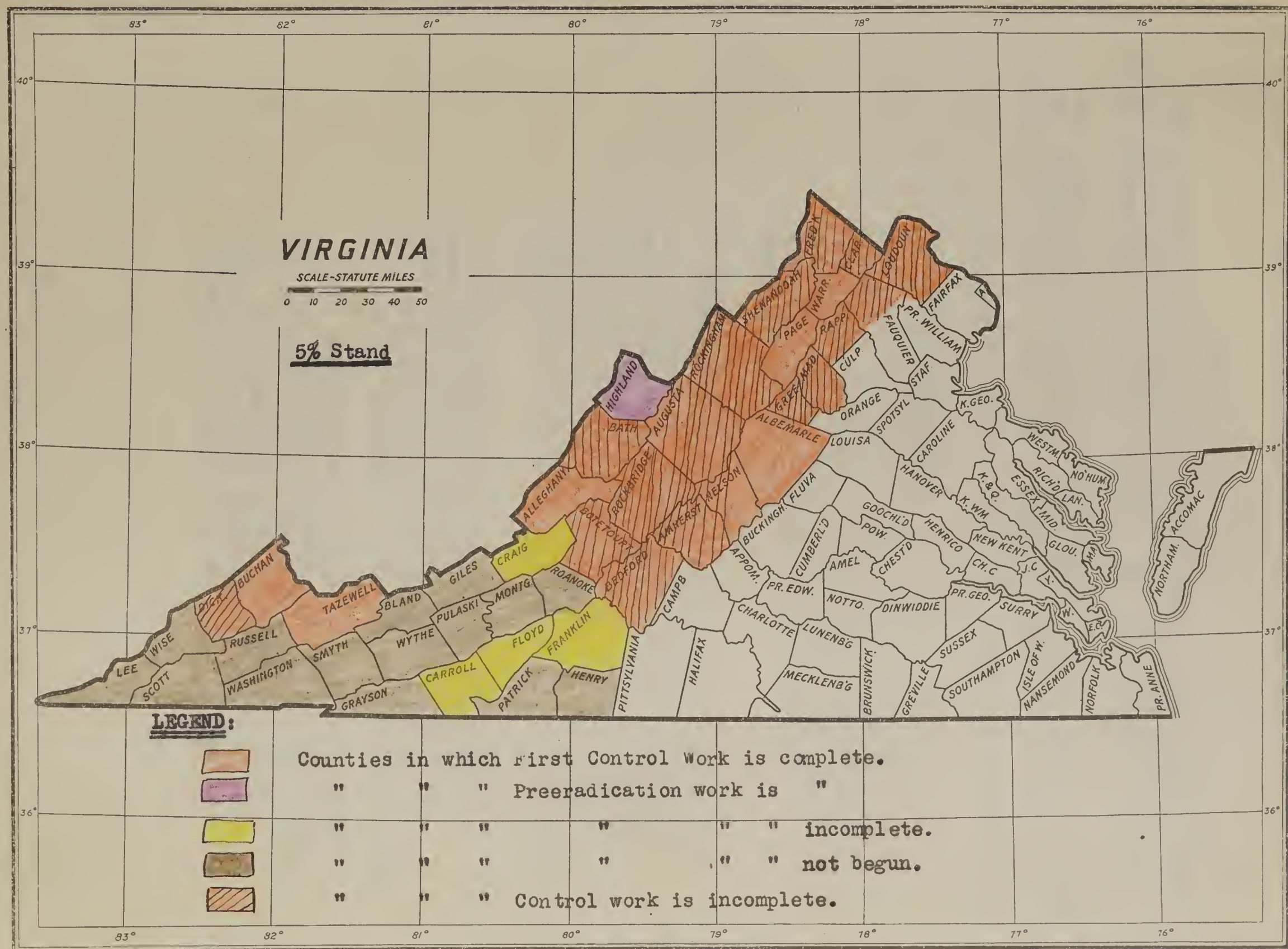
MINIMUM PINE HEIGHT REQUIREMENTS

Old Standard	New Standard
Under 6' - 100 trees per acre	Under 6' - 200 trees per acre
6' - 20' - 80 trees per acre	6' - 15' - 125 trees per acre
21'-40 ' -50 trees per acre	16'-30 ' -100 trees per acre
Over 40' -35 trees per acre	Over 30' -75 trees per acre.

Due to this shift in the standard of pine requirements, a number of the counties have been partially worked on the old standard and partially on the new. As a consequence, upon the completion of the Pine Location Survey of Virginia, the amount of white pine reported will fall far short of the estimated amount of white pine in Mr. Cope's report.

The amount of $675.12 listed under "Special Projects" for District Agents, covered Cost of Informational and Service Activities, interviews, Meetings Addressed, Compilation of special maps for Bureau Office, time spent in conferences, etc.

Progress of Work to January 1, 1935.



July 1, 1919.

woh /copy/ J. G. Luce, Jr. - 1/5/35.

REPORT ON CHECKING OF BLISTER RUST CONTROL WORK ON PRIVATE LANDS IN VIRGINIA

The checking of the thoroughness of N. R. A. crew eradication on private lands in Virginia was carried on by Blister Rust Checker, D. H. Fitzwater, the State Leader, and the several district agents.

The first table at the end of this section shows a tabulation of Mr. Fitzwater's findings. The table that follows it gives results of a few of the check plot-findings of the N. R. A. Agents.

The method employed in checking were as follows:-

A. General Scouting

An examination of the crew-worked area over a meandering course of travel that traversed the sites where Ribes were most likely to be found. This method was rare-l ly used alone, except in a few cases where limited time prevented a more detailed analysis of the area.

B. Check Plots:

1/16 acre plots (52 feet square) were laid out by means of pacing and twine. The cheap guide twine used in crew work was utilized. After the check plot had been examined, the twine was left to mark the plot for further reference, and also, in order to save the time and the trouble necessary to rewind the string.

Check plots were generally taken where numbrous hanging bushes denoted that the Ribes had grown thickest. Very few plots were taken in "light Infested" areas in order to balance showing on "heavily infested" areas.

The greatest advantage of a square check plot is that the checker can pause in center and without moving cover most of plot of plot with his eyes if the undergrowth is light. Often bushes that are missed in moving are instantly brought to view when one halts.

Some use was made of the 'advance check plot' method of checking. This method consists of the laying of a check plot with natural boundaries in advance of and unknown to the crew men. A tally of the bushes thereon is made and, after the crew has worked the area, a count of bushes missed is taken.

In 1935 it is planned to utilize the advance check plot to a far greater degree than was done this year. It is felt that this method alone reveals the true efficiency of a crew; its best feature is that it permits of an immediate correction of the crew's laxity.

STATISTICAL REPORT ON CHECKING OF BLISTER RUST WORK
BY ALL AGENCIES IN VIRGINIA IN 1934

D. H. Fitzwater, Checker

Ownership	Location of Pine Area	Block No.	Foreman	Date of Checking 1934	Type of Checking	No. of Check Plots	Total Acreage Checked	Average No. of bushes per acre	Average No. of feet of live stem per acre	Recommendations	Remarks	Date Reworked	Total Ribes Removed	Total acres covered	Aver No. of Ribes per acre
Shenandoah National Park	Black Rock near Fisher's Gap Page County		E.H.Francis	7/18-7/21	1/16 acre plots	12	3/4	188	356	Rework area designated to E. H. Francis	Rust present	-	270,434	2,030	133.2
G. Washington Nat'l Forest	Hone Quarry Run, Augusta County	21 & 22	W.J.Cullen	7-26	General Scouting	-	10	1/10	Very low	No need of reworking at present			5,165	346	15.9
Ditto	Big Run, Tributary to Little Run, Augusta Co.	17	Ditto	"	Ditto	--	10	0	Ditto	Ditto			117	110	1.0
"	Skidmore Run, 2 miles west Stokesville, Augusta County	8	"	"	"	--	32	11/16	Very high on areas to be reworked	Area known to Cullen for reworking	Indicated area reworked '34		1,799	430	4.2
"	Flat Run, Tributary of North River Augusta County	10	"	7/25	"	--	12	0	Very low	OK			0	204	0
"	Little River Rockingham County	13	"	7/24	"	--	10	½	Ditto	OK			4,941	447	11
Private	Meadows School, adjacent to Shenandoah Nat. Park Page County	1 & 2	Early	7/13 7/14	1/16 acre plots	2-#2 2-#2	¼	320 Blocks #1 - 16 " # 2	464-Plot #1 33 Plot # 2	Area #1 to be reworked	27 seeds on one 1/16 #1	7/1 7/13	11,875	310	38.3
"	Tanners Ridge on Naked Creek, Page County	125-C 126-C	"	7/6-7/7 and 7/12	Ditto	6	3/8	132	37	No need of reworking at present	41 seedling on 1/16 acre	7/7	18,410	452	40.8
"	Gathrights Place, Falling Springs, Bath County	5	L. Walker	8/27	General Scouting	- -	- -	Very low	Very low	Cliffs appear to be clean		8/30	3,778	499	7.6
"	Gathrights Greener's Mill Bath County	6	Ditto	8/28	1/16 acre plots	7	7/16	214	146	Area to be reworked in spring	43 seedlings in the 7 check plots	7/30 8/4	7,111	114	62.4
"	Skidmore Fork above Rawley Springs, Rockingham County	3	Holt	8/30	General Scouting	--	---	Several hundred	Very high on cliffs	Cliffs to be reworked Rust present	27 large bushes pulled on cliffs		1,165	258	44.9
"	Dry River, Harrisonburg Watershed, Rockingham County	5	"	"	Ditto	--	---	Ditto	Ditto	Cliffs to be reworked	Rust found on bushes	7/9	7,592	419	18.1
"	Chestnut Ridge near Rawley Springs, Rockingham County	4	"	"	General Scouting	--	---	Very few	Very low	No need of reworking at present		6/19	8.310	232	35.9
	Little Flat Top Mt. Albemarle County Charlottesville Quadrangle	11, 13, 14, 15, 18, 19	Stevens	8/31	Ditto	--	---	Very many on spot to be reworked	Very high on areas to be reworked	Area to be reworked known to J. G. Luce, Jr. State Leader	9 bushes found at one place with 96 ft. live stem	4/26 to 6/22	9,660	1100	8.8

Data on original work to be filled in by State Leader

1 The averages above were obtained from plots taken where pulled bushes could be seen, hence these figures may be higher than the average number of Ribes pulled in the original working over the entire area.

STATISTICAL REPORT ON CHECKING N.R.A BLISTER RUST CONTROL WORK IN VIRGINIA

ERADICATION SEASON 1934

N.R.A AGENTS

All Areas Worked Referred to Herein Privately Owned

Location of Pine Area	Pine Area Number	Foreman in Charge	Date of Checking	Type of Checking	No. of Check Plots	Total Acreage Checked	Aver. No. Bushed per acre	Aver. Feet Live stem Per acre	Recommendations	Remarks	Date Worked	Total Ribes Pulled	Total Acreage Covered	Average No. Ribes Per Acre	Checker
Augusta County															
Little River Exception	1	John Cramer	9/21	1/16 acre	4	1/4	8	56	Easy eradication	2 blank plots	9/5-17	2125	590	3.6	Luce
Skidmore Run "	3	Jake Cramer	9/21	"	5	5/16	32	18	Previously worked by U. S. F. S.	1 blank plot	9/8 10/2	4970	252	19.7	"
Peter Seay "	2	J. A. Cramer	10/5	"	4	1/4	20	12	Easy eradication	2 blank plots	9/15 10/9	4950	443	11.2	Early
Hodges Draft "	7	Armentrout	10/5	"	5	5/16	4	24	" "	4 blank plots	10/4	410	35	11.7	"
Bath County															
Near Skeet Field, Hot Springs	5	Cowdrey	8/17	1/16 acre	2	1/8	56	52	To be rescouted in 1936	Bushes concentrated in spots	8/7/11	1425	137	10.4	Luce
Mrs. Snyder's property on Cedar Creek	4	Thomas	8/18	"	2	1/8	72	140		Rescouted by Walker Few bushes found	8/7/24	5229	1250	4.1	"
J. B. Thacker's " "	3	Johnson	8/18	"	8	1/2	12	42	Bushes near check plots	Ditto	8/7/17	6802	1050	6.5	"
Healing Springs Gap	8	"	9/22	"	4	1/4	8	14		No bushes in general scouting. (3 blank plots)	8/22/30	5100	448	10.5	"
Rappahannock County															
Hazel Mountain	1-2	Sisk	8/23	1/16 acre	4	1/4	36	96	To be rescouted infection nearby	Plots on heaviest infected areas	8/ 8/11	1900	1000	1.9	Luce
Rockingham County															
Third Hill	V	Ross	9/19	1/16 acre	5	5/16	28	32	One bush found in general scouting	2 blank plots	8/27 - 9/1	2720	262	10.4	Luce
Church Mountain	3	Swecker	9/28	"	1	1/4	8	44	One bush eight feet live stem	2 blank plots	"	15580	829	18.8	Swecker
Hopkins Hollow	2-s	Ross	10/1	"	7	7/16	12	18		4 blank plots	10/1 13	8234	390	21.1	"
" "	2-s	Ross	10/25	"	7	7/16	2	12		1 bush on 7 plots	10/1	8234	390	21.1	Kiser
Kephart Hollow	1-s	Heatwole	10/30	"	7	7/16	2	1		Ditto 8-27	Ditto 8/27	4861	270	18.0	"
Mongold Hollow	2-k	Ross & Swecker	9/24	"	6	3/8	15	65			9/27	17912	476	37.5	"

COMMONWEALTH OF VIRGINIA

DEPARTMENT OF AGRICULTURE AND IMMIGRATION

Richmond, Virginia

QUARANTINE ON ACCOUNT OF THE WHITE PINE BLISTER RUST

Notice of Quarantine No. 3

Approved May 25th, 1934 : Effective May 25, 1934.

(1) WHEREAS, the White Pine Blister Rust Disease (Cronartium ribicola, Fischer), a very destructive plant disease not heretofore widely preveland or distributed within this state, was discovered on its alternate host, the Wild Gooseberry, Ribes species in 1931 in Frederick County near Star Tannery and in Rappahannock County at Thornton Gap, close to the Rappahannock-Page County Line; and in 1932 the disease was discovered in Page County for the first time on fourteen cultivated Red Currants:

(2) NOW, THEREFORE, in order to prevent in so far as possible its further spread in this commonwealth, under authority of an act of the General Assembly known as the State Crop Pest Law, Chapter 39 Section 870 to 905 of the Code amended, a quarantine is hereby established against this disease, prohibiting the dissemination, growing or other uses of all species of Currants and Gooseberries in that part of the state lying West of the western boundaries of the following counties:

Pittsylvania	Buckingham	Orange
Campbell	Fluvanna	Stafford
Appomattox	Louisa	Prince William
		Fairfax

and the movement of five-leafed pines within this area is hereby prohibited unless the owner first obtains a special permit from the state entomologist for such movement.

(3) This quarantine shall operate to permit representatives of this department to enter all premises whatsoever and to destroy living plants of all species of currants, and gooseberries found growing thereon, whether or not infected with the White Pine Blister Rust Disease except that in the case of cultivated species the destruction is limited to 1500 feet from White Pine Stands.

(4) This quarantine action is authorized by Sections 871, 871-d 872 of the Code of Virginia and by Section 1 of the Rules and Regulations supplemental to the Virginia Crop Pest Law.

(5) This quarantine shall take effect on and after May 25, 1934, and continue in force until public notice is given withdrawing the same.

(Signed) G. W. Koiner
Commissioner of Agriculture & Immigration

Approved by State Board of Agriculture & Immigration
Signed W. W. Sproul
President

UNAKA NATIONAL FOREST

TENNESSEE AND VIRGINIA

For report of work carried on by W.H. Robens see under Virginia, next following this report.